The Milton Trail Plan

Shared Use Trail Plan

For:
The City of Milton, Georgia

Prepared by the:
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About the Client

The City of Milton, incorporated on December 1, 2006, is a community of more than 20,000 residents spread out over 23,000 acres in north Fulton County with easy access to the big-city amenities of nearby Atlanta. The City of Milton is committed to maintaining the unique quality of life for constituents while efficiently delivering essential services to residents and businesses in a community interactive environment. More information about the City of Milton is available online at www.cityofmiltonga.us.

About the School of City and Regional Planning

The Georgia Institute of Technology City and Regional Planning Program, founded in 1953, is one of the oldest planning programs in the country. The program's mission is to be a global leader in the creation of sustainable cities and regions. More information about the School of City and Regional Planning is available online at www.planning.gatech.edu.

Cover Credit: Travis Allen

Section V: Cost, Funding, and Implementation

About the Center for Quality Growth and Regional Development

The Center for Quality Growth and Regional Development (CQGRD) is an applied research center of the Georgia Institute of Technology. The Center serves communities—particularly those in the Southeast United States—by producing, disseminating, and helping to implement new ideas and technologies that improve the theory and practice of quality growth. More information about the CQGRD is available online at www.cqgrd.gatech.edu.

About the Center for Geographic Information Systems

The Center for Geographic Information System (CGIS) is an interdisciplinary research center focused on GIS technology applications, education, and providing cutting-edge innovative solutions to diverse real world problems. Its mission includes to: research and develop the next generation of geospatial technologies; apply GIS tools and technologies to a variety of research and industry problems; and enhance and disseminate digital spatial databases for the State of Georgia. More information about the CGIS is available online at www.coa.gatech.edu/cgis.

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Section I: Introduction

A. Why Bicycle/Pedestrian Plans?

Shared use trails build community. They allow pedestrians, bicyclists, and equestrians to see, speak, and interact with one another, and with other people in yards, parks, and schools sites. Shared use trails create identity. Seemingly small details such as trail surfaces, signs, and fences can provide can help provide a common visual identity across all the City's diverse neighborhoods. Shared use trails help our children. In previous generations many children were able to walk or bike to their local schools, parks, and stores. Trails can restore to our children some of the independence enjoyed by their parents and grandparents. Shared use trails are safe. They are separated from the roadway and provide a better alternative to walking or bicycling on the roadway itself, especially for children. Shared use trails reduce traffic. People are no longer forced to use their cars for short trips to schools, parks, or stores. Shared use trails are healthy. They provide people with a wider range of recreational and transportation opportunities. Finally, shared use trails protect neighborhoods. They provide a buffer between automobile traffic and homes, and they can help relieve pressure to convert busy roads from residential land uses to commercial.

Pedestrian and bicycle facilities convey many community benefits. Therefore, as a growing city, it is important for the City of Milton to plan for such facilities now. Being proactive about planning ensures that future transportation improvements, land use decisions, and new developments reflect the community's vision and goals.

B. Background and History of the Project

During early 2005 the Georgia Legislature made several changes in state law which made it less difficult to incorporate new cities. In June of 2005 the residents of the Sandy Springs area of Fulton County voted overwhelmingly to become a new city. During the same legislative session District 46 Representative Jan Jones, whose district includes Milton, Roswell, Alpharetta and Mountain Park, led the effort to secure a state allocation to conduct a "green belt study" in northern Fulton County. Due to earlier greenspace work conducted at Georgia Tech, the allocation was directed to the Georgia Tech College of Architecture.

Dr. Cheryl Contant, director of the Georgia Tech City and Regional Planning Program was named director of the study, with additional members of the study team including Dr. Steve French and Tony Giarrusso of the Georgia Tech Center for Geographic Information Systems, Dr. Catherine Ross and Karen Leone de Nie of the Center for Quality Growth and Regional Development, and Dr. William Drummond of the City and Regional Planning Program and Center for Geographic Information Systems.

In the spring of 2006 Dr. Cheryl Contant received a prestigious fellowship from the American Council on Education. This fellowship required her to work for a year in academic administration at a place other than Georgia Tech and in July 2006 Dr. William Drummond was appointed project director. Also in spring 2006 the Georgia Legislature passed legislation allowing the Milton and Johns Creek areas of north Fulton County to hold referenda on incorporating as cities. When the Milton referendum was held on July 18, 2007, incorporation passed with 86% of the voters in favor. Milton became a city on December 1, 2006.

With the incorporation of Milton proceeding more rapidly than might have been expected, in fall 2006 Representative Jones requested two changes in the study direction. First, the study would now focus on developing a bicycle and pedestrian plan for Milton. Since the City would already include substantial park space, including a new 200 acre park in northwest Milton, and because most of the City area was rural in character, the most pressing need for the area was development of a shared use system of trails. The

following text was developed to summarize the goals and content of the study:

> The purpose of this study is to develop a Bicycle and Pedestrian Plan for the newly established City of Milton, Georgia. The plan will propose a network of multiuse trails to connect Milton's neighborhoods with its parks, schools, libraries, stores, sports facilities, and other public spaces. The study will consider the needs of the entire population of Milton, but it will also adopt a special focus on the needs of schoolchildren. To lower expenses and connect as much as the city as possible, the majority of the network will consist of multiuse trails paralleling existing roads.

The second change in direction was the decision to alter what had originally been planned to be an informal, ad hoc, advisory committee into an official City of Milton Committee. The study process was paused to allow for a Citizens' Advisory Committee to be appointed by the new city council and mayor. In January 2007 the City of Milton Bicycle and Pedestrian Citizens' Advisory Committee was formed and the first meeting held on February 13, 2007. The vital role and major decisions of the Committee will be described later in the report.

C. Structure of Citizens' Advisory Committee

The original work plan for the study called for the establishment of an ad hoc advisory committee consisting of individual citizens and representatives of interest groups, developers, and governments. However, when the incorporation process moved more rapidly than many would have expected, it became clear that there would be significant advantages to using an officially-appointed City committee rather than a more informal group. The report from a formal City committee would carry more weight than the recommendations of an ad hoc group. City resources and staff could be more directly incorporated into the effort. Representatives from every geographic area of the City could present the unique needs of each of their areas, but other appointees could provide a balanced perspective of the City as a whole.

The Citizens' Advisory Committee was structured so that each City Council member appointed one representative, the Mayor appointed one representative, and Representative Jan Jones appointed two members. The Committee consisted of the following individuals:

- David Deutsch
- Mike Moss
- Bill Schellhorn
- Suzanne Cassada
- David Chatham
- Travis Allen
- Heidi Sowder
- Brian Maloney
- Craig Warner

Dr. William Drummond, of Georgia Tech, facilitated the committee meetings. Michael Tuller, Deputy Director of Community Development, and Abbie Jones, City Engineer, provided extensive and extremely knowledgeable support from City staff. Francesca Ivie created official minutes for the meetings.

D. Citizens' Advisory Committee Deliberations

The first Committee meeting was held on February 13, 2007 at 7:00 p.m., with subsequent meetings on February 27, March 13, March 27, April 10, April 24, May 8, May 16, May 23, and June 5. The Committee meetings usually lasted 90 minutes, but several meetings extended until 9:00 and 9:30.

For the initial committee meetings the members received briefings and background materials from William Drummond, Abbie Jones, and Michael Tuller. Representative Jan Jones met with the Committee to provide background information, charge the Committee, and answer questions. The Committee also elected Brian Maloney as chair.

During its March meetings the Committee identified important bicycle and pedestrian destinations throughout the City and discussed the number of bicycle and pedestrian trips each would attract. The Committee also reviewed future population projections for the City and located major current and planned population centers and subdivisions. Information on trip destinations and origins was entered into the project geographic information system by Georgia Tech. The Committee also reviewed and discussed various design options for bicycle and pedestrian facilities.

For the April meetings Committee members were provided large-format GIS maps with aerial photography, the City's road network, major trip destinations, and major trip origins. The Committee members then drafted their individual recommended trail locations, which were digitized into the GIS and combined into a single map with all the members' recommendations (Figure 2.8). At an extended meeting on April 10 the Committee developed an overall system of recommended routes to cover the entire city. This system consisted of more than 70 miles of trails.

On April 24 and May 8 the Committee selected a subset of the most important routes to serve as the core network to be recommended for short-term funding in the City's five-year capital improvements program. This highly deliberative process proceeded within a framework of three objectives determined by the Committee.

- First, the network would begin with the City's existing gravel roads located in the central section of the City. Since these roads provide good east/west connectivity, they are already highly suitable for pedestrian and bicycle traffic, and they serve as a distinctive feature reinforcing the rural character of the community.
- Second, the Committee determined that in constructing new shared use trails, the highest priority would be to connect the City's schools to the trails network. This objective could be achieved with the construction of only 5.2 miles of shared use trail: the Freemanville South and Bethany/Cogburn segments. These trails would link all the City's current and planned public schools as well as Alpharetta's North Park, the Milton High cross-country trail.
- Third, the Committee's priority was to connect the City's major parks to the network. This was accomplished by designating the Freemanville North and Birmingham trails to link the planned Birmingham park (and Birmingham Crossroads), and the Thompson trail to link to Bell Memorial Park and its recreation facilities. Budget cost estimates and trail segments prioritizations were an important result of this process.

During its May meetings the Committee refined the core network and considered trail surfaces, trail design principles, and an explicit statement of plan goals. On May 23 the Committee reviewed draft text for the report, and on May 30 the Committee approved the text of the report and forwarded the report to the Milton City Council for consideration at the June 26 Council work session.

E. Goal of The Milton Trail Plan

The Milton City Council has recently adopted a vision statement for the City: "Milton is a distinctive community embracing small-town life and heritage while preserving and enhancing our rural character." The Citizens' Advisory Committee has developed a goal for the Milton Trail plan that is in full accord with the City Council's vision statement. The single goal of the Milton Trail Plan is: to preserve the rural quality of life in the City of Milton by creating an easily accessible shared use trail system connecting the City's schools, parks, neighborhoods, and other points of interest.

The City of Milton is located in the central county of one of the most rapidly growing metropolitan areas in the United States, less than 30 miles north of downtown Atlanta. Yet Milton has managed to maintain much of its rural legacy, including rolling landscapes, gravel roads, and horse farms. The Citizens' Advisory Committee believes that a citywide network of shared use trails can be an important element in a larger strategy to preserve that legacy while simultaneously providing a broad range of additional benefits.

F. Existing Bicycle/Pedestrian Plans

There are currently several bicycle and pedestrian plans in various stages of completion affecting the City of Milton. These range from state and region-wide plans down to county, city and even neighborhood specific plans. A primary function of bicycle and pedestrian planning is to increase the opportunity to use non-motorized means of transportation both for work and recreational trips. One way to accomplish this within a bike and pedestrian infrastructure is to ensure connectivity, both internal and external. While internal connectivity is often an explicit part of the planning process, external connectivity does not receive the same attention. Ensuring external connectivity involves knowing what current and future connections are possible and working with the appropriate planning agencies (state, regional, and local) to discover connective potential as well as the potential funding and planning advantages that cooperation and coordination will bring.

The following sections summarize all of the plans—statewide, regional, and of adjacent communities—that have bicycle and pedestrian components either within the City of Milton or adjacent to its boundaries.

STATEWIDE BICYCLE/PEDESTRIAN PLANS

GEORGIA DEPARTMENT OF TRANSPORTATION (GDOT)

Georgia Bicycle and Pedestrian Plan (GABPP)

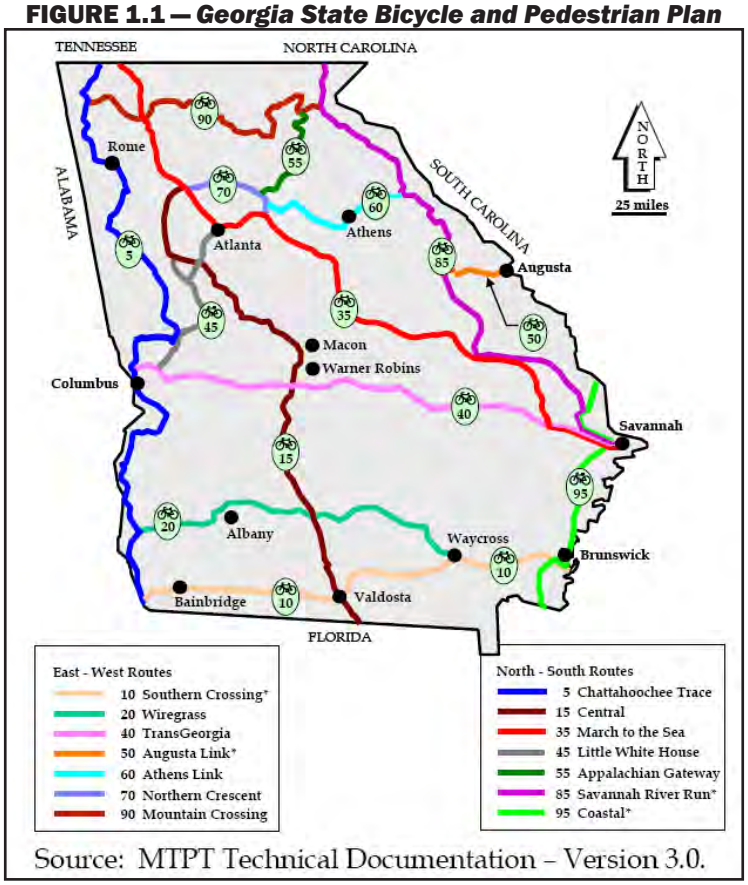
In 1997, the Georgia State Transportation Board developed the *Georgia Bicycle and Pedestrian Plan (GABPP)* to address the lack of bike and pedestrian routes throughout the state. The main goals of the plan included:

- Promote non-motorized transportation as a means of congestion mitigation.
- Promote non-motorized transportation as an environmentally-friendly means of mobility.
- Promote connectivity of non-motorized facilities with other modes of transportation.
- Promote bicycling and walking as mobility options in urban and rural areas of the state.
- Develop a transportation network of primary bicycle routes throughout the state to provide connectivity for intrastate and interstate bicycle travel.
- Promote establishment of U.S. numbered bicycle routes in Georgia as part of a national network of bicycle routes.
- Encourage economic development opportunities that enhance bicycle and pedestrian mobility.

The Northern Crescent Route of the *Georgia Bicycle and Pedestrian Plan* (Figure 1.1) travels through the southern part of the City of Milton (Figure 1.2). Compared to the state average on state roads, the Northern Crescent Route has one of the highest suitability levels for bicycle travel of all statewide routes:

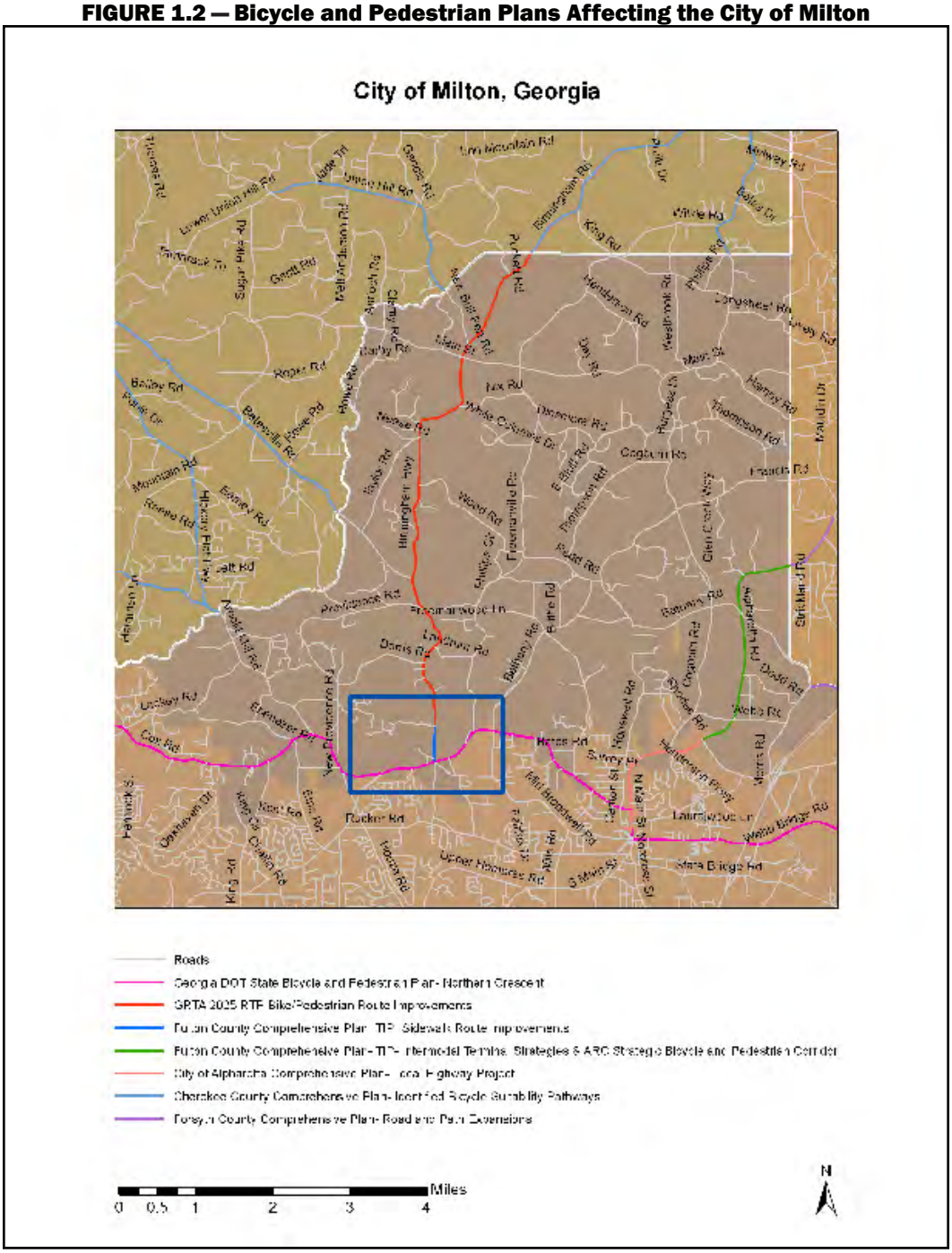
- 50% of total center line miles of state roads are fully suitable for bicycle travel.
- 2% of Northern Crescent Route miles are moderately suitable for bicycle travel.
- 48% of Northern Crescent Route miles are not currently suitable for bicycle travel.

FIGURE 1.1 — *Georgia State Bicycle and Pedestrian Plan*



Source: *2005-2035 Georgia Statewide Transportation Plan.*
Available online: http://www.dot.state.ga.us/DOT/plan-prog/planning/swtp/SWTP_final_report_feb_2007.pdf

FIGURE 1.2 — Bicycle and Pedestrian Plans Affecting the City of Milton



Georgia Strategic Highway Safety Plan (SHSP)

Governor Sonny Purdue completed the *Georgia Strategic Highway Safety Plan (SHSP)*, required by the federal transportation law SAFETEA-LU, in October 2006. One focus area of the *Plan* is on "non-motorized transportation," bicycle and pedestrian transportation. The *Plan* states that over 7,539 pedestrians and 2,845 bicyclists were involved in crashes on state routes between 2003 and 2005, and that of these crashes, 529 pedestrians and bicyclists were killed. The *Plan* identifies current strategies to address safety problems associated with bicyclists and pedestrians as well as future opportunities to reduce non-motorized user fatalities. The major opportunities identified include route design, signage, and educational programs. The *Strategic Highway Safety Plan* is a potential source of funding for bicycle and pedestrians facilities.

REGIONAL BICYCLE/PEDESTRIAN PLANS

ATLANTA REGIONAL COMMISSION (ARC)

The Atlanta Regional Commission (ARC) is the regional planning and intergovernmental coordinating agency for the 10-county metropolitan Atlanta region and also acts as the federally-designated metropolitan planning organization (MPO) for the 18-county Atlanta region. As such, they are responsible for working with the region to develop plans and policies to enhance mobility, reduce congestion, and meet air quality standards. They are also responsible for programming projects to implement the *Regional Transportation Plan (RTP)*.

The Atlanta Regional Commission (ARC) "has been promoting safe, functional and regional bicycle and pedestrian planning since 1973 and continues to update its process to address new needs and trends." The ARC is involved in many efforts to increase the usage and quality of bike and pedestrian paths around the Metro Atlanta area. Some of these include:

- *Atlanta Regional Bicycle Transportation and Pedestrian Walkways Plan*,
- Inventory of Pedestrian Facilities Around Transit,
- Walkable Community Workshops,
- Atlanta Region Walk-To-School Program, and
- Regional Bicycle and Pedestrian Contact Information.

Atlanta Regional Bicycle Transportation and Pedestrian Walkways Plan

The ARC is currently updating the *Atlanta Regional Bicycle Transportation and Pedestrian Walkways Plan*. A draft was released in May 2007. The plan was originally produced in 2002 as a policy- and project-oriented plan focused on project development at the regional level. However, since 2002, there has been an expressed need to further policies and projects relating to bicycle and pedestrian paths around activity centers. According to the ARC: "The *Bike/Ped Plan* update will build on the strategies of the previous plan with the intention of creating both a regional-scale bicycle network that includes both on-road facilities and multi-use pathways and pedestrian friendly environments focused around major activity centers, schools, and major transit facilities." The *Plan* identifies five major goals for bicycle and pedestrian pathways:

1. Provide a safe and effective network of bicycle transportation and pedestrian walkways for the entire Atlanta region;
2. Provide safe and convenient bicycle and pedestrian access to schools;
3. Provide safe and convenient bicycling and pedestrian access to activity centers, transit and other high-demand destinations;
4. Reduce motor vehicle congestion and improve air quality by providing transportation options to the citizens of the Atlanta region; and
5. Enhance the health, fitness, and quality of life of the citizens of the Atlanta region.

The *Plan* determined that the overall level of accommodation for bicyclists on regional roadways is very low. It was also determined that pedestrian conditions for walking conditions and crosswalks are also sub-standard due to the high speeds and volumes of motor vehicle traffic and lack of and poorly designed sidewalks. Within the City of Milton, the ARC identified State Route 9 (SR 9) as a regional strategic bicycle corridor needing improvements (Figure 1.3).

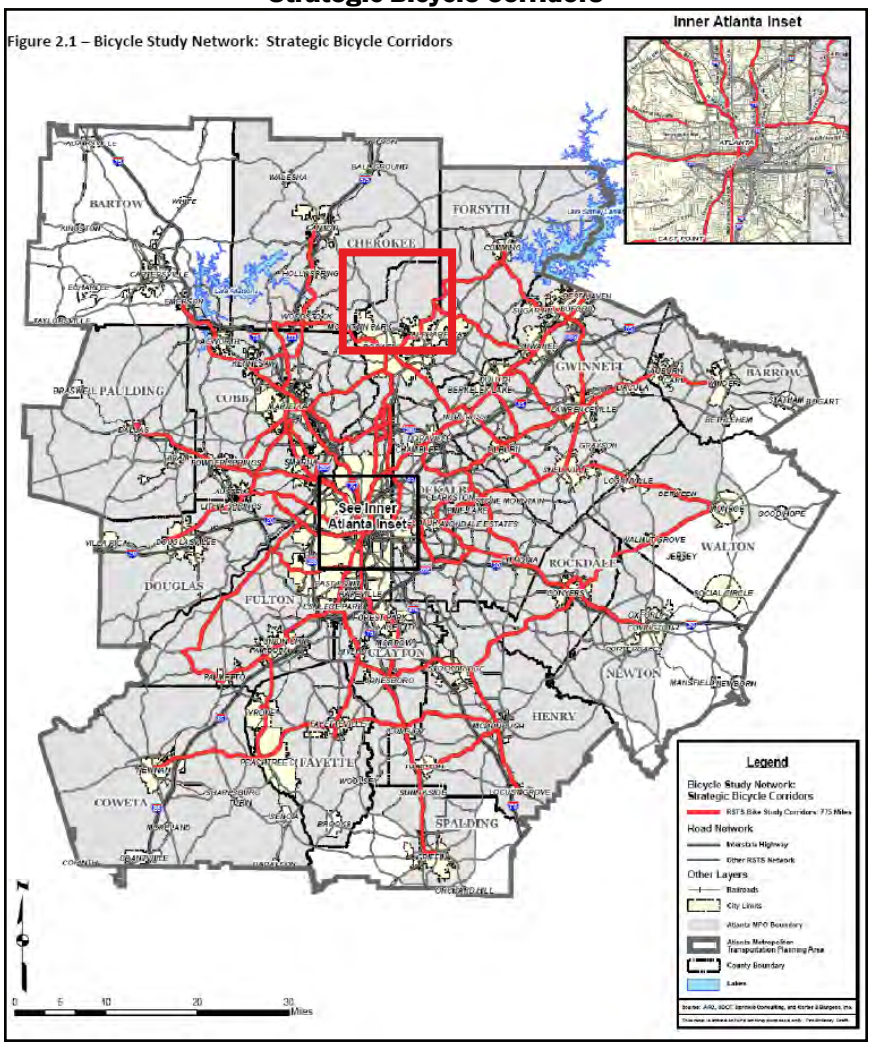
The ARC suggested general policy recommendations to solve the problems identified in the previous analysis:

1. **Routine Accommodation and "Complete Streets"**
   "Complete Streets" are those which accommodate all modes of transportation, including automobile, bicycling, and walking. If new streets are created, they should include these design aspects, while existing roadways should be retrofitted to allow for various modes of transportation.
2. **Identifying Re-Stripe Candidates**
   Re-striping takes existing roads where no shoulder or bike lane is present and "stripes" off a lane along the curb for bicycling. However, in order to do this, the travel lanes of roads must remain

adequate to adhere to the guidelines already established for automobile transportation.

3. **Uncontrolled Crossings**
   Roads which have no medians and have heavy pedestrian traffic crossing them must be studied to determine when a crossing treatment is needed. If it is determined that one is needed, the appropriate and effective type of treatment must be identified and evaluated.
4. **End of Trip Bicycle Facilities**
   Incentives must be created in order to encourage people to walk or travel by bicycle to their destinations. These incentives include designated bicycle parking and shower and locker facilities among others. However, incentives must also be provided to developers in order for these facilities to be established within the development. Developer incentives include but are not limited to: floor area ratio bonuses, reductions to required yard setbacks, variances to parking lot dimensions, and greenspace requirement reduction.
5. **Bicycle and Pedestrian Promotional Programs**
   Bicycle and pedestrian promotional programs fall into four main categories: education, encouragement, enforcement, and awareness. Each of these types of programs can promote the advantages of bicycling and walking to destinations as opposed to automobile travel.

FIGURE 1.3 — *ARC Atlanta Regional Bicycle Transportation & Pedestrian Walkways Plan*: Strategic Bicycle Corridors



Source: *ARC Atlanta Regional Bicycle Transportation and Pedestrian Walkways Plan*.
Available online: http://www.atlantaregional.com/cps/rde/xchg/arc/hs.xsl/1769_ENU_HTML.htm

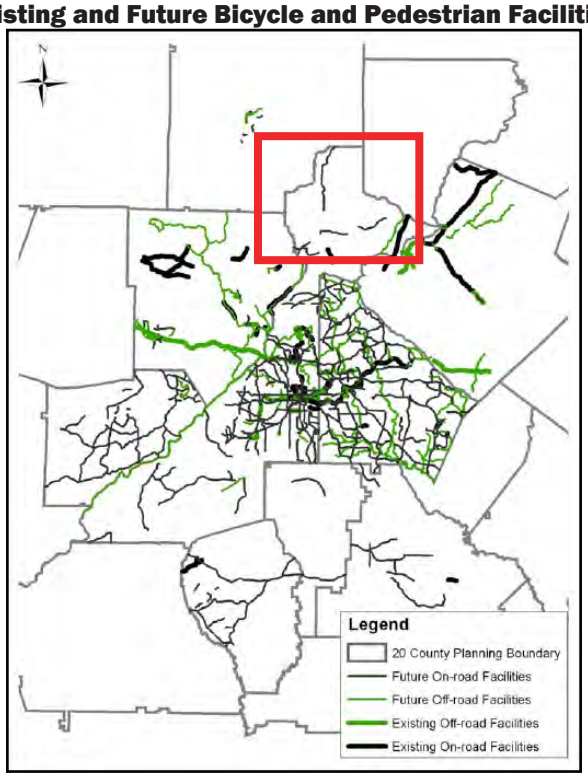
Envision6 Needs Assessment Report

The *Envision6 Needs Assessment Report* prepared by the ARC "evaluates identified regional transportation needs and evaluates system-wide, corridor and activity center assessments of 2005 and 2030 no-build and build scenarios." The *Report* determines that while a pedestrian system exists in urban areas, smaller central business districts, and older residential neighborhoods, there is a lack of sidewalk systems in suburban and unincorporated areas (Figure 1.4).

The Bicycle and Pedestrian Planning section of the *Envision6 Report* identifies four current planning activities being undertaken by the ARC to expand bicycle and pedestrian transportation opportunities in the metro Atlanta region: *ARC's Bicycle and Pedestrian Plan* Update, Bicycle and Pedestrian Task Force, Walkable Community Workshops, Safe Routes to School and Effective Cycling.

1. In 2006, the ARC created the *2006 Bicycle and Pedestrian Plan* Update to "create 1) a regional scale bicycle network that includes both on-road facilities and multi-use pathways and 2) pedestrian friendly environments focused around major activity centers, schools, and major transit facilities." The report is expected to be finished in June 2007.
2. The ARC Bicycle and Pedestrian Task Force was created in 1990 and is composed of local jurisdictional staff, traffic agencies, state and federal planning partners and interested citizens. The Task Force assists in determining the transportation network as well as developing long-term goals.
3. The Walkable Community Workshops include local officials, city planners, engineers, neighborhood groups, advocacy groups and local citizens to generate solutions associated with walkability in areas.
4. Safe Routes to School and Effective Cycling are two programs which educate the public on safe walking and bicycling habits.

FIGURE 1.4 — *ARC Envision6 Needs Assessment Report*: Existing and Future Bicycle and Pedestrian Facilities

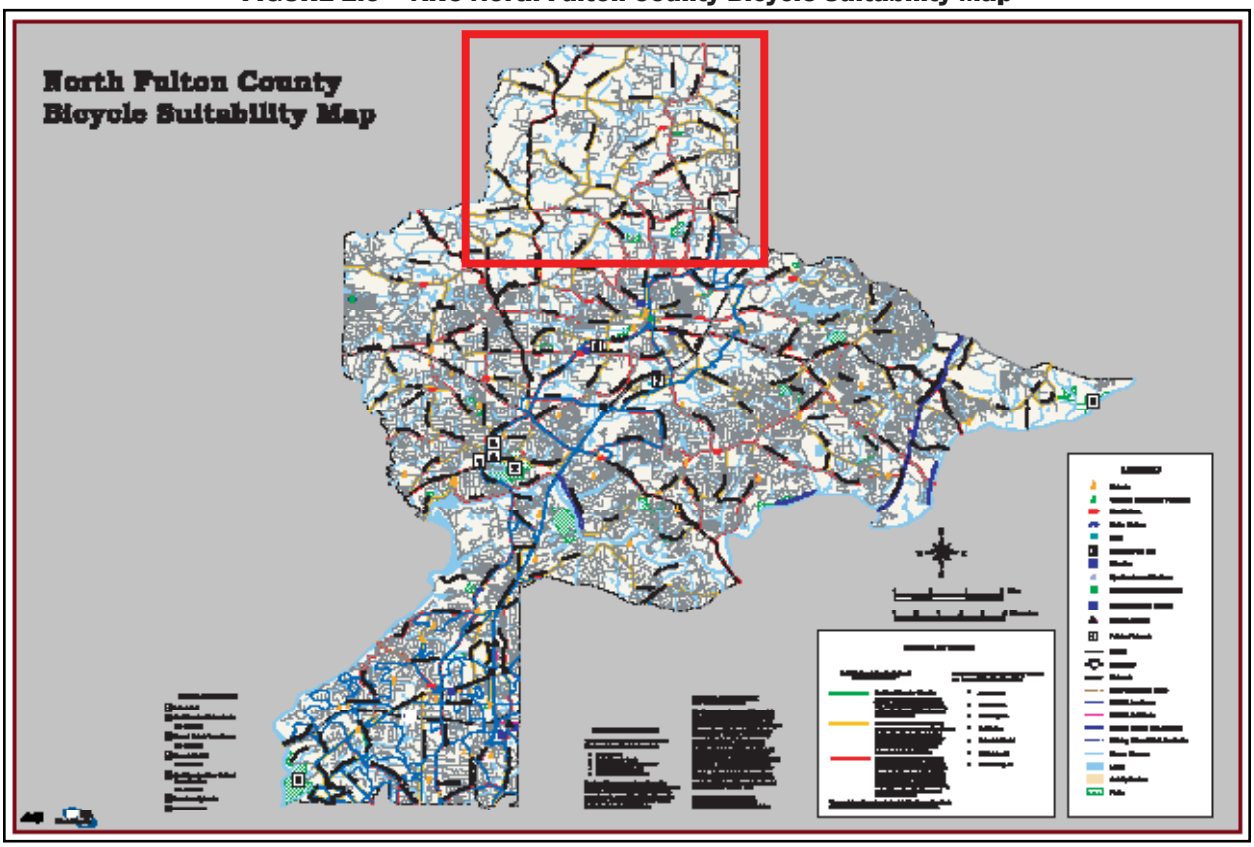


Source: *ARC Envision6 Needs Assessment Report*.
Available online: http://www.atlantaregional.com/cps/rde/xbcr/arc/E6NeedsAssess1-3.pdf

Bike Suitability Maps

Suitability maps were created in 2003 by the ARC to assist cyclists in determining routes through the region. Several factors were used in determining the suitability rating for bicycle routes in the region including traffic counts, outside land and shoulder widths, and the amount of truck traffic. Most of the roads within the City of Milton, are designated as moderate suitability for bicycle traffic, except Birmingham Highway and Hopewell Road, which are designated as difficult for bicycle traffic (Figure 1.5).

FIGURE 1.5 — ARC North Fulton County Bicycle Suitability Map



Source: *ARC Bicycle Suitability Study*.
Available online: http://www.atlantaregional.com/cps/rde/xchg/arc/hs.xsl/611_ENU_HTML.htm

GEORGIA REGIONAL TRANSPORTATION AUTHORITY (GRTA)

GRTA was created as State of Georgia authority to act as a catalyst in efforts to improve the functioning of the transportation network in the 13-county Atlanta region and throughout the state. GRTA currently works with governmental agencies throughout the region to address issues such as mobility, air quality, and land use.

Northern Sub-Area Study/GA-400 Corridor Analysis

The *Northern Sub-Area/GA-400 Study (NSAS)* was developed with three goals in mind:

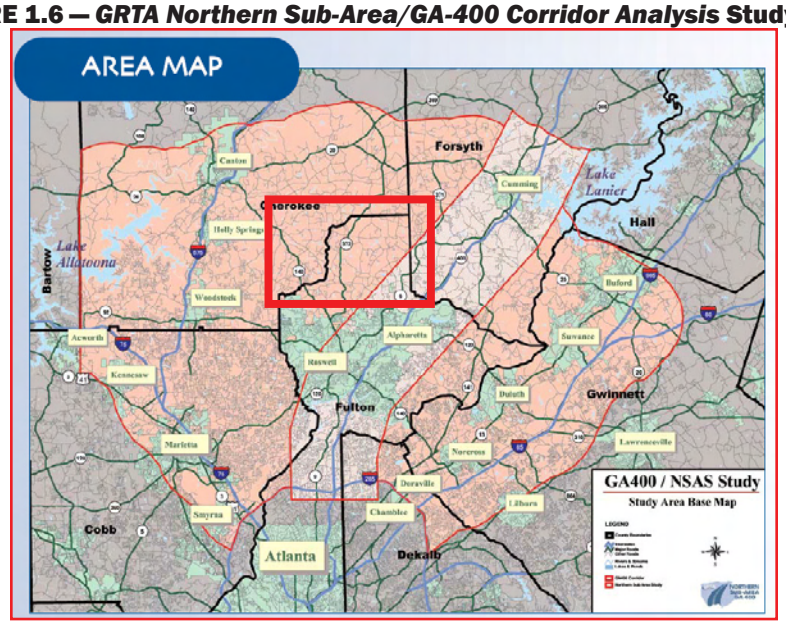
1. Comprehensively evaluate transportation, land use, economic growth, and air quality issues in the study area;
2. Fulfill the requirements of the Atlanta Agreement and the Settlement Agreement of *GTA vs. Shackelford*[1]; and

1 On January 20, 1999, a civil suit was filed in the U.S. District Court by the Georgians for Transportation Alternatives (GTA), The Georgia Conservancy, and the Sierra Club (Plaintiffs) against the Georgia Department of Transportation Commissioner Wayne Shackelford and other transportation officials and organizations (Defendants). The Plaintiffs argued against decisions made by the Defendants to "adopt, approve, fund or assist certain highway projects in 13 Atlanta Metropolitan counties on the grounds that the

3. Provide recommendations for the 2004–2006 Transportation Improvement Program and the *2030 Regional Transportation Plan* and *Regional Development Plan* updates.

According to the *NSAS Analysis*, "Bicycle paths and sidewalks exist throughout the Study Area (Figure 1.6), but are frequently sporadic and unconnected to adjacent facilities, neighborhoods, commercial areas, and transit nodes." Several pedestrian and bicycle facilities are planned for in the ARC's *2025 RTP* (Figure 1.7). The plan allocated $500 million of the total $36 billion being spent on Atlanta's transportation system is designated for the expansion of Atlanta's bicycle and pedestrian pathways. Although, it is important to recognize that the region is struggling to stretch available funding for transportation projects and that often bicycle and pedestrian projects are the first to be postponed or dropped altogether.

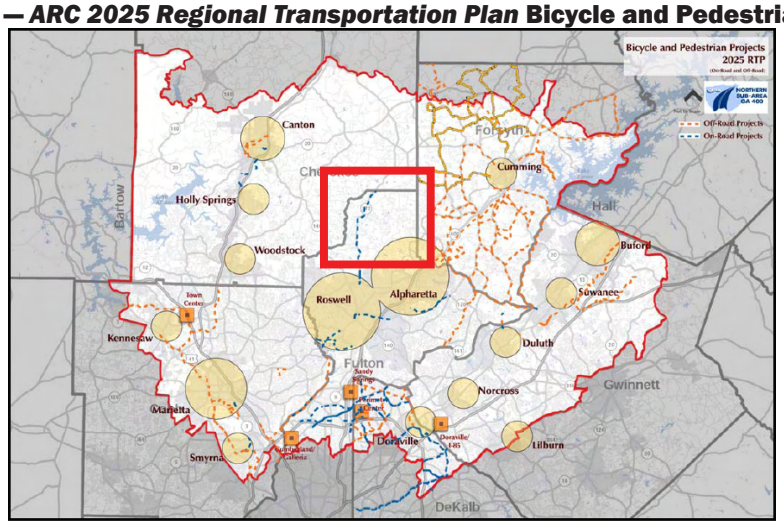
FIGURE 1.6 — *GRTA Northern Sub-Area/GA-400 Corridor Analysis* Study Area



Source: *GRTA Northern Sub-Area/GA-400 Corridor Analysis*.
Available online: http://207.101.65.114/info_center/ed_boards/area_map.pdf

decisions violated several statues, including the Clean Air Act, the Transportation Equity Act for the 21st Century, the National Environmental Policy Act, and the Administrative Procedure Act." The Settlement Agreement outlines guidelines for a peer review of the ARC's model used to analyze on-road mobile VOC and NOx emissions. As a result, GDOT and ARC decided to develop a "comprehensive sub-area study of transportation, land use, and air quality issues in northern metropolitan Atlanta." More information about this civil suit can be found at http://207.101.65.114/info_center/shackelford.asp.

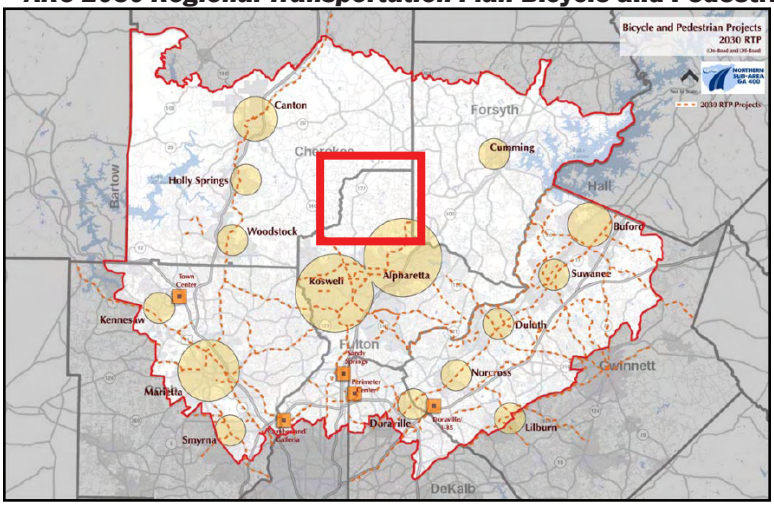
FIGURE 1.7 — *ARC 2025 Regional Transportation Plan* Bicycle and Pedestrian Projects



Source: *GRTA Northern Sub-Area Study/GA-400 Corridor Analysis, Bike and Pedestrian Issues.*
Available online: http://207.101.65.114/info_center/final_report/H%20-%20Bicycle%20and%20Pedestrian%20Issues.pdf

The updated *2030 Regional Transportation Plan* by the ARC (Figure 1.8) furthers the emphasis placed on bicycle and pedestrian pathway expansion from the *2025 Regional Transportation Plan*, resulting in "an ambitious and more comprehensive network of planned improvements, incorporating local plans and additional connections identified by local jurisdictions and advocacy groups."

FIGURE 1.8 — *ARC 2030 Regional Transportation Plan* Bicycle and Pedestrian Projects



Source: *GRTA Northern Sub-Area Study/GA-400 Corridor Analysis, Bike and Pedestrian Issues.*
Available online: http://207.101.65.114/info_center/final_report/H%20-%20Bicycle%20and%20Pedestrian%20Issues.pdf

The *NSAS Analysis* identifies the major deficiencies in bicycle and pedestrian facility design within the Study Area:

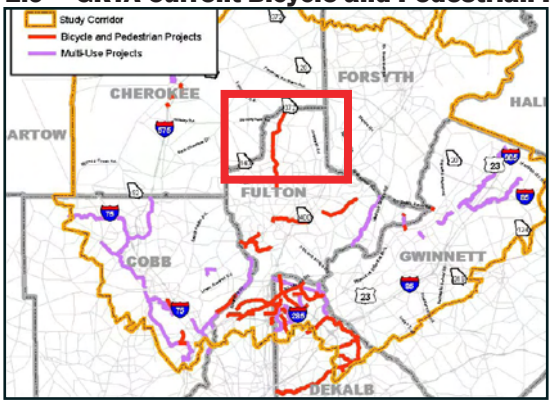
1. A lack of sidewalks along transit routes/stops;
2. Gaps in existing sidewalks within activity centers;
3. A deficiency in pedestrian crossing frequency, visibility, and universal access;
4. Busy streets in activity centers with little or no room for cyclists or pedestrians;
5. Few regional connections between activity centers;
6. Numerous curb cuts in activity centers inviting potential conflicts between motorized and non-motorized commuters; and
7. Lack of pedestrian mobility within and to/from Environmental Justice communities.

The *2030 Regional Transportation Plan* also identifies key activities for bicycle and pedestrian pathways:

1. Educational programs promoting safety for cyclists, pedestrians, and motorists;
2. Promotional campaigns to promote the use of expanded facilities;
3. Strategies to encourage bicycle and pedestrian transportation options;
4. Programs to enforce laws as they apply the bicycles and pedestrians;
5. Programs to strengthen laws to protect pedestrians and cyclists;
6. Design for safe, clearly designated facilities for bicycles and pedestrians;
7. Maintenance programs to keep facilities clear of vegetation and debris; and
8. Public education to combat a perception that associates shared use paths with crime.

The current Existing and Future Bicycle and Pedestrian Facilities Map (Figure 1.9) suggests that there are on-road facilities planned for Birmingham Highway within the City of Milton.

FIGURE 1.9 — GRTA Current Bicycle and Pedestrian Projects



Source: *GRTA Northern Sub-Area/GA-400 Corridor Analysis*.
Available online: http://207.101.65.114/info_center/pdfs/atms_board.pdf

ADJACENT COMMUNITIES' BICYCLE/PEDESTRIAN PLANS

FULTON COUNTY

The *Fulton County Comprehensive Transportation Plan (CTP)* calls the bicycle/pedestrian pathway system "a key element in establishing a multi-modal transportation system that successfully supports public transportation, transportation options and other travel demand management strategies."

City of Alpharetta

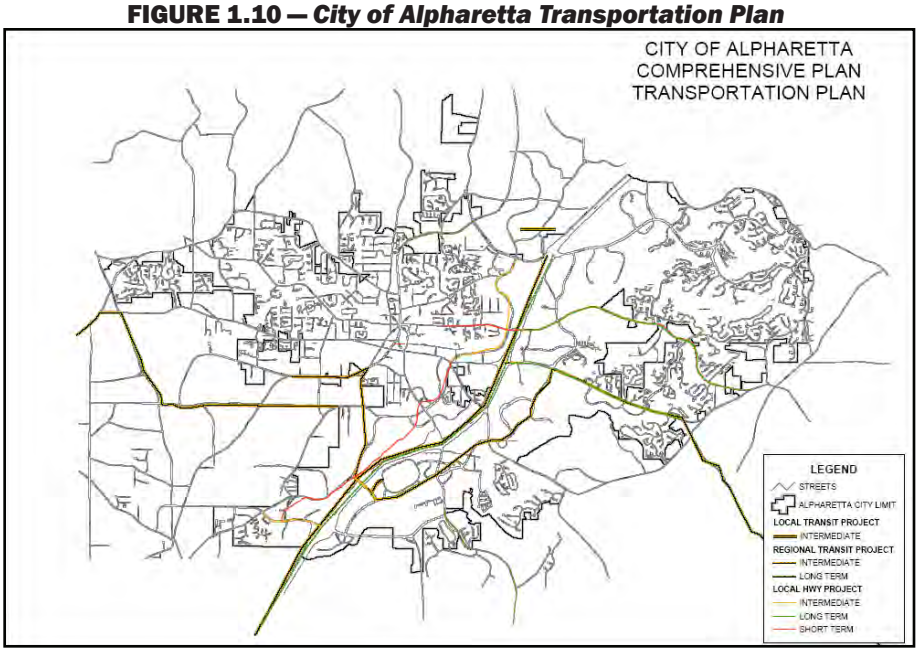
The City of Alpharetta is located in north Fulton County. It serves as the southern border to the City of Milton.

According to the *Alpharetta Comprehensive Plan 2025*, "A comprehensive system of pedestrian and bicycle facilities is an important element of a high quality urban environment... A network of sidewalks and bikeways unifies a community, both visually and functionally, and distinguishes it from the automobile-oriented environments of suburban and rural areas."

The City of Alpharetta's Unified Development Code mandates that all new developments have sidewalks. The City of Alpharetta has invested many resources in streetscape improvement to assist in pedestrian and vehicular traffic circulation. On the other hand, there are few designated on-street bicycle lanes in the city despite the number of roads with wide enough shoulders to accommodate bicycle lanes.

Alpharetta has identified State Route 9 (SR9) from Canton Street to Winward Parkway as a long-term local highway project as coordinated with the STP project of the same limits and also the adjacent project on State Route 9 from Winward Parkway to the Forsyth County line (Figure 1.10). The later phase is to be programmed in *Envision6 Report* and is located within the City of Milton.

FIGURE 1.10 — *City of Alpharetta Transportation Plan*



Source: *City of Alpharetta Comprehensive Plan*. Available online:
http://alpharetta.ga.us/files/docs/pdfs/Publications/COMPLAN%202025/Maps/Transportation%20Improvement%20Map.pdf

Crabapple Community Design Guidelines

There are a number of streetscape projects in progress in Fulton County. One of which is at Crabapple Community in the City of Milton, focused at the intersections of Crabapple Road, Birmingham Highway, Mid-Broadwell Road, Mayfield Road, and Broadwell Road (Figure 1.11).

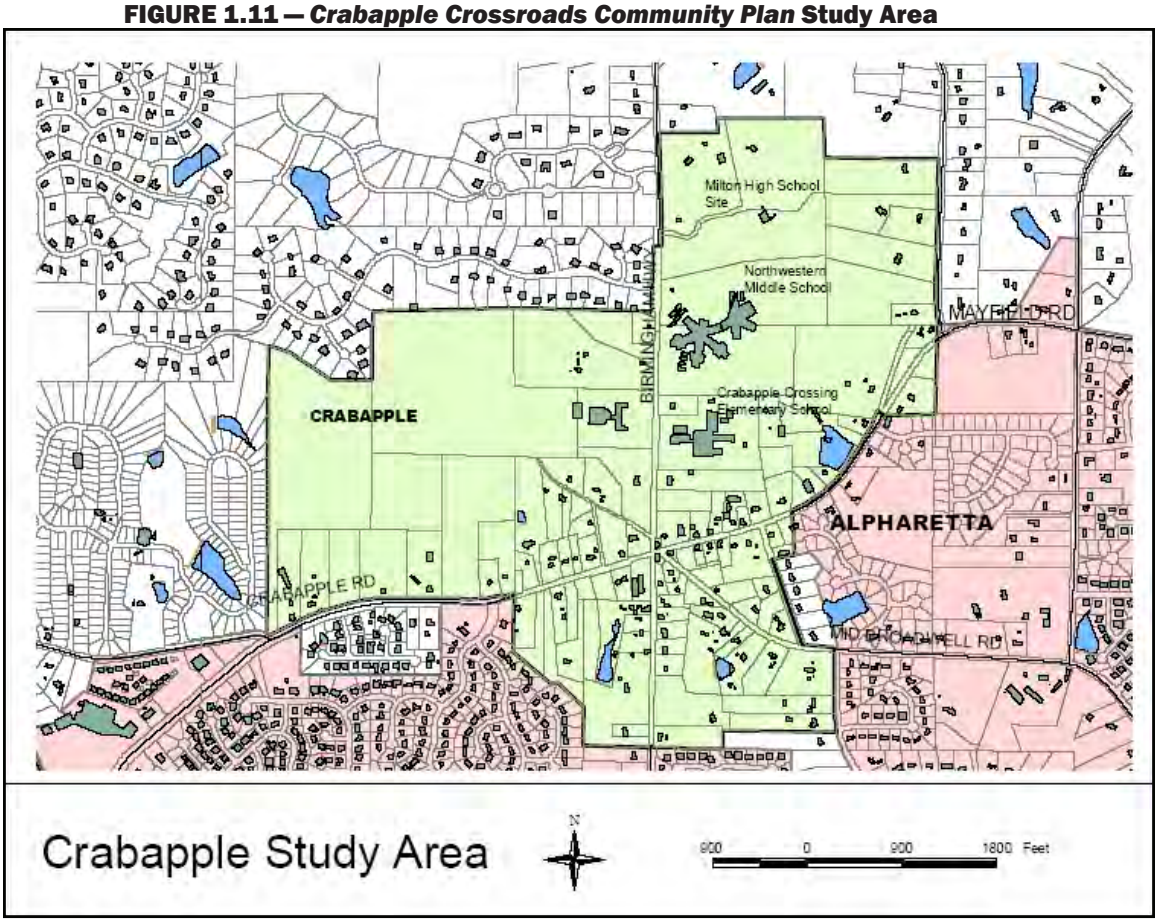
The Crabapple Community, a neighborhood within the City of Milton, hired consultants to develop the *Crabapple Crossroads Community Plan* to address the pressing issues of development and traffic congestion within the area. The lack of a road network within the community causes congestion and unsafe traffic conditions. By implementing a new, organized street network, the Crabapple Community hopes that the community will become a more pedestrian-oriented village. The dense network of streets within the area would result in "a higher modal split for pedestrians and cyclists i.e. more people will be walking and biking." The *Community Plan* also addresses the need to improve the Crabapple streetscape, including sidewalks, trees, pedestrian lights, and pedestrian amenities. Including these elements into the Crabapple Community design would further encourage pedestrian and bicycle traffic.

In response to the *Community Plan*, the *Crabapple Crossroads Design Guidelines* were created to "preserve, encourage and promote, through the built environment, the sense of place, the sense of ownership, the sense of identity, the sense of evolution and the sense of community present in the area." The *Design Guidelines* address issues of architectural design, land use, open space, and transportation. The transportation goals include:

1. To develop an interconnected transportation network and to implement a pedestrian-oriented core surrounded by residential uses at its perimeter.
2. To increase the variety of possible and safe transportation modes, to improve mobility, and to improve pedestrian circulation by planning and promoting pedestrian-oriented developments.
3. To promote land uses that encourage walking, neighborhood businesses as identified in the Crabapple Plan, and retail uses that promote the village character.

Grant monies have been awarded through transportation enhancement funding for streetscape projects in Crabapple and are expected to be completed in the current Milton capital improvements program.

FIGURE 1.11 — *Crabapple Crossroads Community Plan* Study Area



Source: *Crabapple Crossroads Design Guidelines.*
Available online: http://www.fultonecd.org/planning/crabapple/designguide-07-04.pdf

CHEROKEE COUNTY

Cherokee County abuts the northwestern corner of the City of Milton.

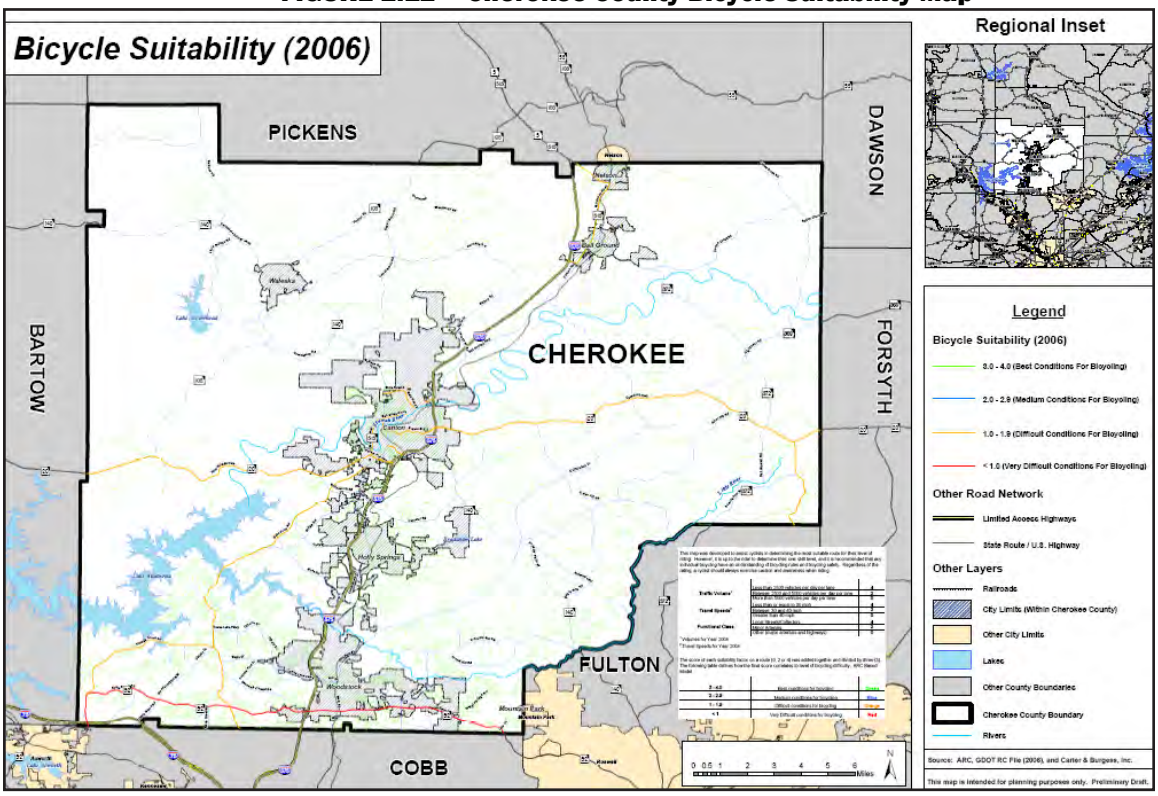
The *Cherokee County Overall Comprehensive Plan* recommends that the county "incorporate a network of bicycle and pedestrian pathways into its roadway improvement program." The *Plan* calls for pedestrian and bicycle pathways on both sides of arterial roadways, yet pathways on only one side of collector streets. These transportation-related issues are to be further addressed in an additional *Comprehensive Transportation Plan.*

Cherokee County is currently working on the creation of a *Comprehensive Transportation Plan*. The *Plan* is a "25-year long-range, multi-model plan that will provide the citizens of Cherokee County with transportation choices, improved mobility and air quality, and better connectivity to land uses." It will serve as the blueprint for transportation-related decisions and investments for Cherokee County. From the studies conducted for the *Comprehensive Transportation Plan*, it was determined that based on the suitability criteria established by the ARC, conditions for bicycling in Cherokee County are generally good. No pedestrian needs are identified between Cherokee County and the City of Milton. State Route 140 from Houze Road to Rachette and other segments within Roswell, Alpharetta, Cherokee and Milton are all programmed in this STP and Envision6. Currently Roswell and Alpharetta prefer bicycle lanes and Milton and Cherokee prefer shared use paths, according to the state Bicycle and Pedestrian Coordinator, Amy Goodwin.

The Bicycle Suitability Map (Figure 1.12) illustrates that most of the roads leading into the City of Milton are categorized as roads with the "best conditions for bicycling." However, major roads into the City of Milton

from Cherokee County, including Birmingham Road, Hickory Flat Highway/Arnold Mill Road, Batesville Road, and New Bull Pen Road, are determined to have "medium conditions for bicycling." Only one road—Hopewell Road—is determined to have "difficult conditions for bicycling."

FIGURE 1.12 — Cherokee County Bicycle Suitability Map



Source: *Cherokee County Comprehensive Transportation Plan*.
Available online: http://ctp.cherokeega.com/docs/Maps/11-28-06/Cherokee_BikeSuitability2006_ESize.pdf

FORSYTH COUNTY

Forsyth County serves as the eastern border to the City of Milton.

The *Forsyth County Comprehensive Plan* recognizes the lack of existing bicycle and pedestrian facilities in the County, and therefore, focuses on these types of transportation within the County. The *Forsyth County Bicycle Transportation and Pedestrian Walkways Plan*, adopted in April 2002, was created to "foster the development of an interconnected network of bicycle and pedestrian facilities that meets Forsyth County's future transportation mobility, serves recreation needs, promotes alternative means of transportation, and enhances the County's overall quality of life."

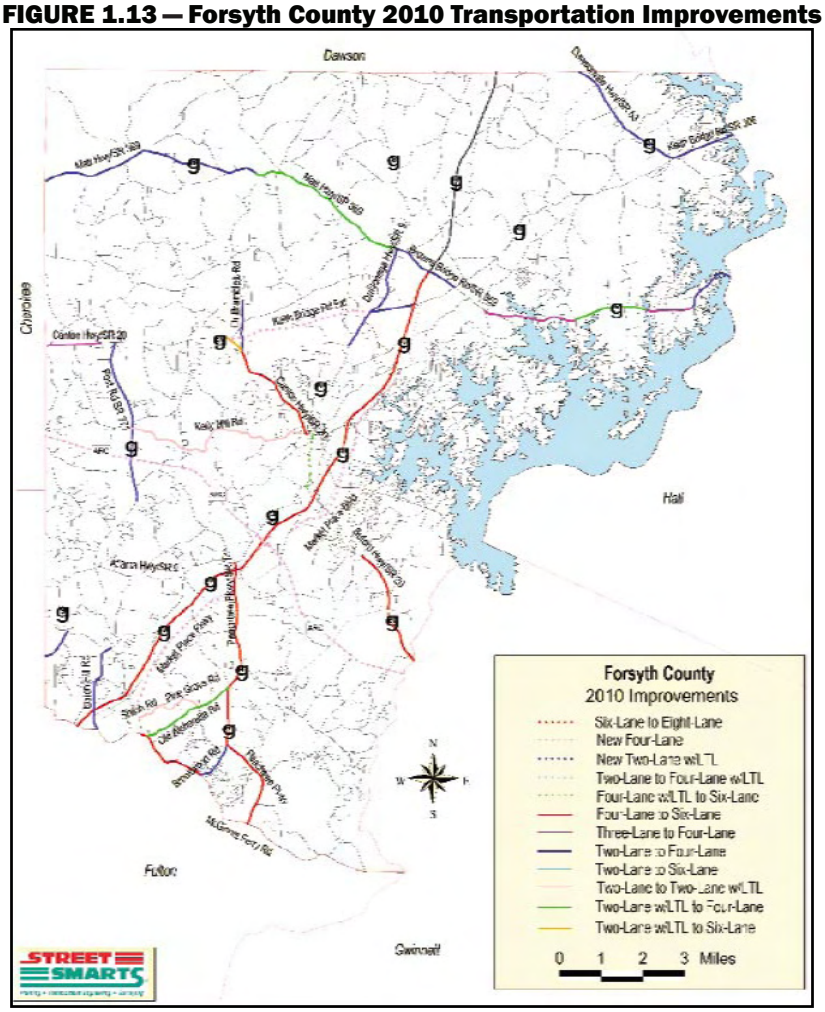
According to the *Forsyth County Bicycle Transportation and Pedestrian Walkways 2025 Plan*, State Route 9 is designated as a two-lane arterial road. However, the section of State Route 9 between Hamby Road and McFarland Road (City of Milton to Forsyth County) "carries a significant amount of traffic due to through southbound traffic from Cherokee County to GA-400." The *Plan* suggests that this road segment, currently designated as a LOS E^2/F^3, needs a two-lane expansion in order to accommodate the current and expected traffic levels. The *Plan* also suggests that the segment of State Route 9 from the Fulton County line to McFarland Road be expanded by two lanes by the year 2020. Multi-use path for bicycles and pedestrians on McGinnis Ferry Road to take place between 2004 to 2008 are recommended in the *Plan* as well. McGinnis

2 Level of service E "represents operating conditions at or near the capacity level. Freedom to maneuver within the traffic stream is extremely difficult. Comfort and convenience levels are extremely poor, and driver frustration is generally high."

3 Level of service F "is used to define forced or breakdown flows. This condition exists when the amount of traffic approaching a point exceeds the amount that can traverse the point."

Ferry Road is the dividing road between the City of Milton and Forsyth County (Figure 1.13). Although only a small portion of this road abuts the City of Milton, this project could either suggest continuation into the City of Milton or provide opportunities for the City of Milton to work with Forsyth County on design standards for these trails.

FIGURE 1.13 — Forsyth County 2010 Transportation Improvements



Source: *Forsyth County Comprehensive Plan*, Chapter 8 Transportation.
Available online: http://www.forsythco.com/DeptPage.asp?DeptID=126&PageID=327

Table 1.1 provides a summary of the state, regional, and adjacent communities bicycle/pedestrian plan information.

TABLE 1.1 — Statewide, Regional, and Adjacent Communities Bicycle/Pedestrian Plans Summary

STATEWIDE BICYCLE/PEDESTRIAN PLANS	
Georgia Department of Transportation (GDOT)	
Georgia State Bicycle and Pedestrian Plan	http://www.dot.state.ga.us/dot/plan-prog/planning/projects/bicycle/index.shtml
REGIONAL BICYCLE/PEDESTRIAN PLANS	
Atlanta Regional Commission (ARC)	
Atlanta Regional Bicycle Transportation and Pedestrian Walkways Plan	http://www.atlantaregional.com/cps/rde/xchg/arc/hs.xsl/1769_ENU_HTML.htm
EnVision6 Report	http://www.atlantaregional.com/cps/rde/xbcr/arc/e6_bikeped_fact_sheet.pdf
Bike Suitability Maps	http://www.atlantaregional.com/cps.rde/xchg/arc/hs.xsl/611_ENU_HTML.htm
Georgia Regional Transportation Authority (GRTA)	
Northern Sub-Area Study/GA-400 Corridor Analysis	http://207.101.65.114/info_center/final_report/H%20-%20Bicycle%20and%20Pedestrian%20Issues.pdf
ADJACENT COMMUNITIES BICYCLE/PEDESTRIAN PLANS	
Fulton County	
Crabapple Community Design Guidelines	http://www.fultonecd.org/planning/crabapple/designguide-07-04.pdf
City of Alpharetta	http://alpharetta.ga.us/index.php?m=publications&id=30
Cherokee County	
Cherokee County	http://www.cherokeega.com/ccweb/departments/pz
Forsyth County	
Forsyth County	http://www.forsythco.com/pdf/files/h.%20Appendix%20E%20-%20Bike%20and%20Pedestrian%20Plan.pdf


Milton
Trail

Section II:
Inventory and Analysis

In order to make informed decisions concerning trail locations, characteristics, and priorities, the project team and City staff provided the Citizens' Advisory Committee with a number of different information compilations, geographic information system (GIS) maps, and preparatory analyses. This section summarizes this data and information to provide the background and justification for Committee's recommendations.[1]

A. Trips and Destinations

Within the context of transportation planning, the fundamental unit of analysis is the trip. The basic characteristics of a trip include its origin, destination, mode choice (single driver automobile, carpool, walk, bike, bus, etc.) and route selection. Traditional transportation planning places the most emphasis on automobile and mass transit trips since these types of trips require massive public investments that must be planned years and sometimes decades, in advance.

Compared to automobile and transit trips, the analytical methods for modeling pedestrian and bicycle trips are relatively primitive. The most sophisticated technique integrates bicycle and pedestrian trips into a comprehensive four-step transportation model based upon traffic analysis zones (TAZs). However, this approach is dependent upon adoption by a regional planning agency (in this case, the Atlanta Regional Commission), and it does not provide very extensive information for a smaller jurisdiction such as the City of Milton.

Other sophisticated bicycle and pedestrian analysis techniques include Level of Service analysis (LOS), which has been conducted for the Atlanta Regional Commission (ARC) regional bicycle and pedestrian plan, and latent demand analysis. Level of Service analysis requires extensive road network information that is not yet available for the City. The only area in the City included in the ARC analysis was Route 9, and without information from different potential routes for comparison Level of Service analysis is not particularly useful.

Latent demand analysis attempts to predict the demand for a potential bicycle or pedestrian facility (trail), if it were to be constructed. The primary factors in this analysis are the number and characteristics of origins and destinations within a certain distance of the trail, and the characteristics of the trail itself. This technique is named latent demand analysis because demand is hidden (or latent) until the facility is actually built. Latent demand analysis works best for employment-related commuting trips the location of current and planned employment centers is relatively easy to determine.

At the less quantitative end of bicycle and pedestrian planning is the technique known as sketch planning. This approach relies on direct knowledge of the area being planned, and uses an interactive development process. This technique is particularly effective for smaller planning areas, like the City of Milton, especially when the process involves stakeholders who are knowledgeable about the area. The Milton Trail Plan has relied most heavily on the sketch planning process, supplemented with GIS information derived from a wide range of sources. The following discussion is based upon ten maps that show the basic information used by the committee to develop the *Plan*.

1 The GIS data generated throughout this project has also been provided directly to City staff in electronic form.

B. Current Conditions in Milton

ENVIRONMENTAL CONDITIONS AND INFRASTRUCTURE

Figures 2.1, 2.2, and 2.3 are base maps showing fundamental data layers. Figure 2.1 includes important natural features such as shaded relief, streams, 100-year flood plains, wetlands, and watershed boundaries. The City of Milton has, in general, gently rolling terrain with limited areas of steeper slopes. It is drained by the Little River in the northwest, Chicken Creek in the north and central sections of the city, and Copper Sandy Creek in the south. There are relatively narrow 100-year flood zones along the major streams and the Little River, but no major barriers to the construction of a trails network. The terrain of the City is well-suited for both walking and bicycling.

FIGURE 2.1 — Natural Features

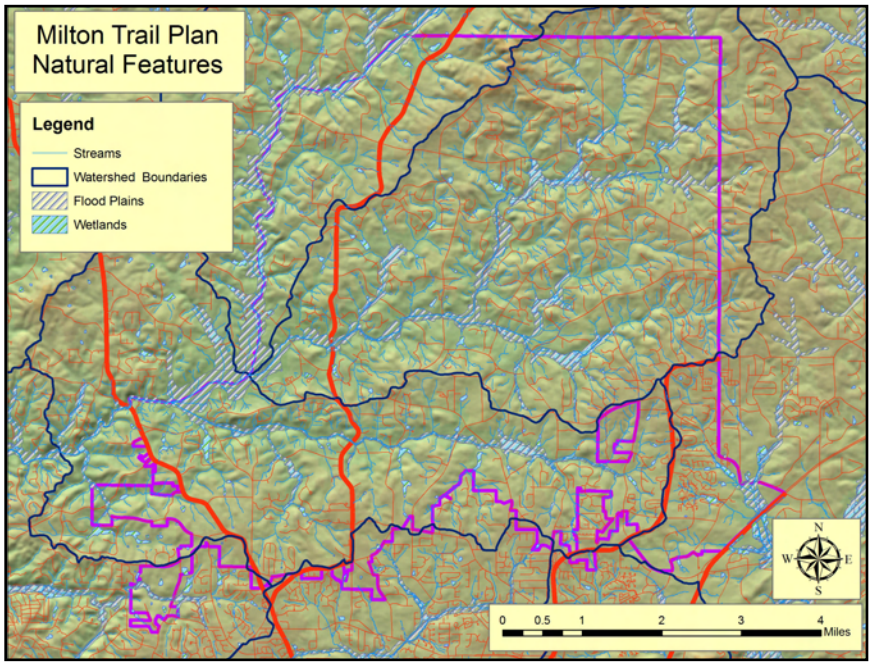


Figure 2.2 shows the 2005 Milton road network and development patterns. Dense development is visible in the southeastern section of the city, as are larger areas of undeveloped land in the central and especially northern portions of the city. The nearest medium-sized cities are Alpharetta to the southeast and south and Roswell further to the south. The major state roads in the City are Arnold Mill Road in the far southwest, Route 9 in the southeast, and Birmingham Highway in the west. The major roads are largely oriented in a north/south direction, and traffic movement in these directions is relatively direct. There are no major east/west roads in the City. There are no Interstate highways in the City, but Georgia Route 400 (GA-400) runs along the City edge in the far southeast.

FIGURE 2.2 — Road Networks and Development Patterns

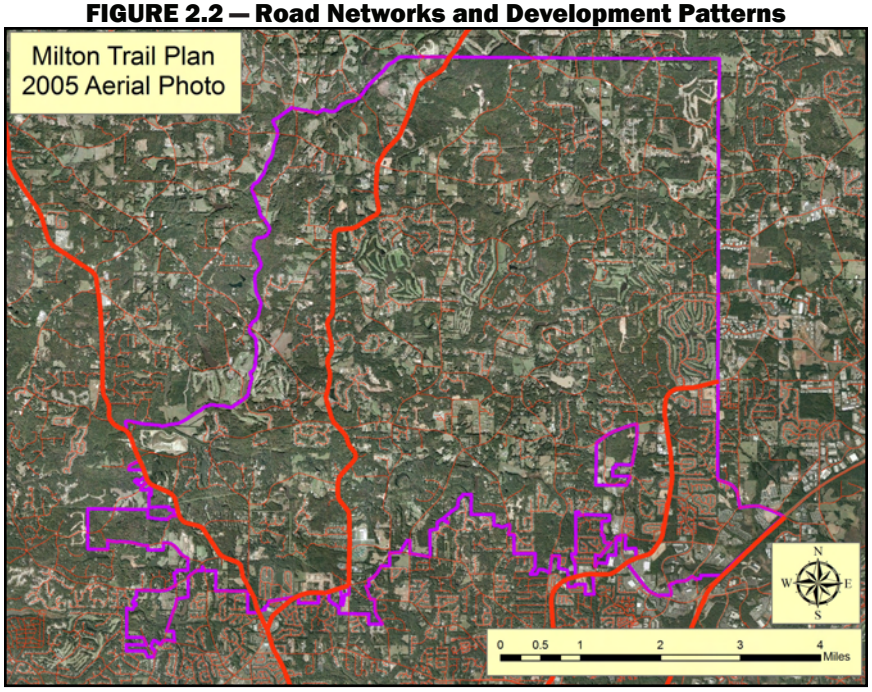
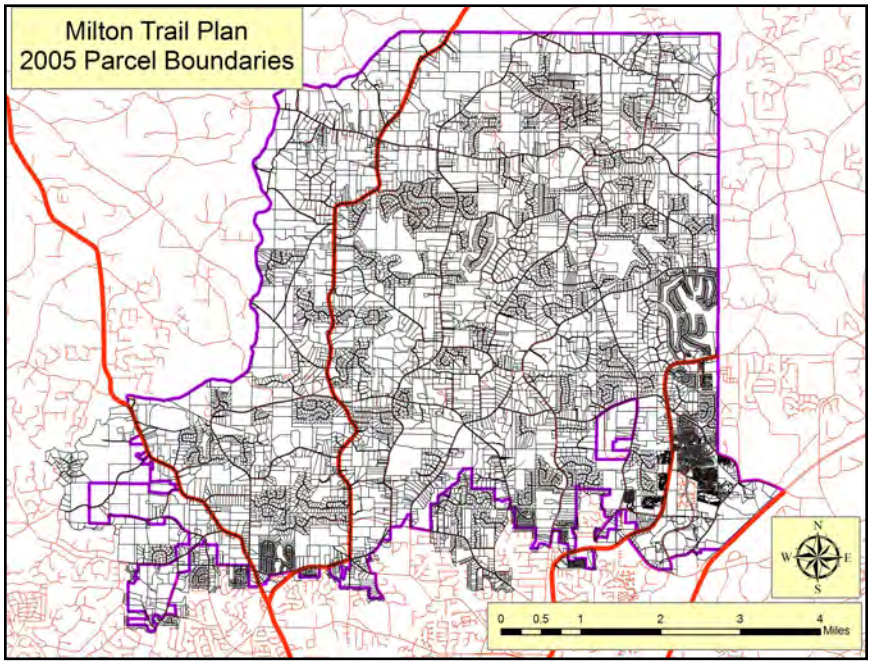


Figure 2.3 shows the 2005 parcel boundaries for the City of Milton. The densest development is visible in the southeast and south, with patchy areas of one-acre subdivisions located in nearly all sections of the City. Yet, as is evident from the parcel map and the aerial photography, the City still retains its essentially rural character. Of the 12,000 parcels in the city totaling about 30,000 acres, about 6,400 parcels are larger than 1 acre, and these parcels include 27,600 acres or 93% of the area of the City. There are 580 parcels over 10 acres in size, representing 45% of the City area. Although some areas of the City are densely developed, the rural character of the area is still predominant.

FIGURE 2.3 — 2005 Parcel Boundaries



POPULATION

Because Milton has incorporated so recently, it is difficult to estimate the City's current population. At the time of incorporation the most commonly estimated population of the area was 20,000 people. This figure is undoubtedly low, due to the annexation of several additional neighborhoods and continued development in many areas of the City. Figures 2.4 and 2.5 show current and projected demographic data for the area. The Atlanta Regional Commission creates long-term (2030) population projections for the metropolitan area, but these are developed at the relatively large census tract area, and year 2000 census tract boundaries do not align with City boundaries. Figures 2.4 and 2.5 show current (2006) population estimates and short-term (2011) population projections as developed by the Environmental Systems Research Institute (ESRI). These are created at the more detailed block group level, but even at this level many of the block group boundaries overlap the City boundary. Figure 2.4 shows estimated 2006 population by block group. Because the geographic area of block groups differs greatly, the individual block groups have been colored to show persons per acre. The densest part of the city lies in the southeast with density declining rapidly to the north, and less rapidly to the west. Labels show the estimated 2006 population by block group. Since many of the block groups include areas outside the City the sum of population for the mapped areas will total a significantly larger number than the actual 2006 City population. Figure 2.5 shows projected growth in population from 2006 to 2011. The colors display the percentage growth in population, and the labels show the actual projected number of new people. The southeast shows the most rapid projected growth rate and the highest gain in population, but the entire city shows substantial projected growth, largely in the 20-25% category.

FIGURE 2.4 — 2006 Population per Acre

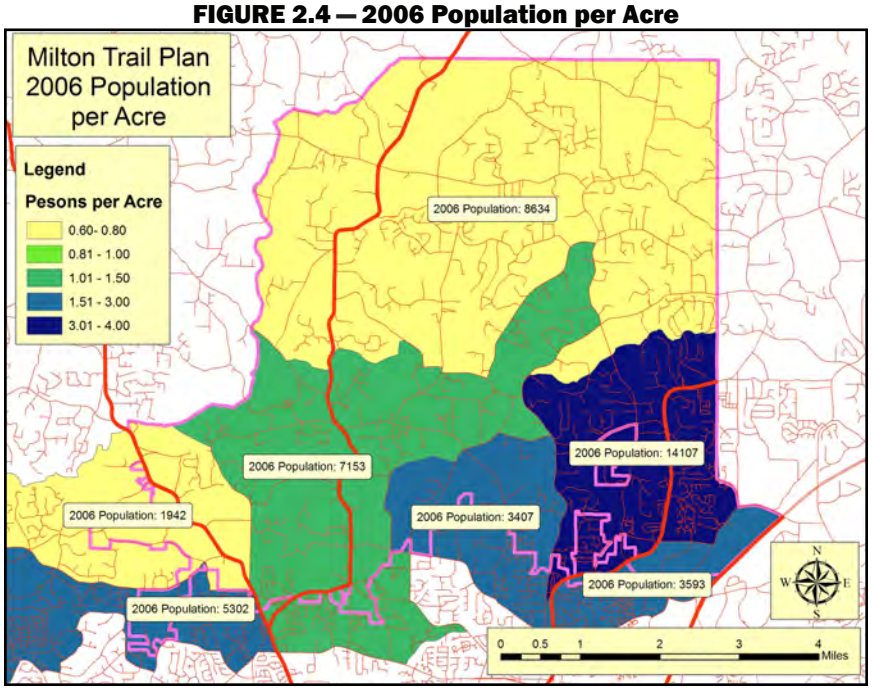
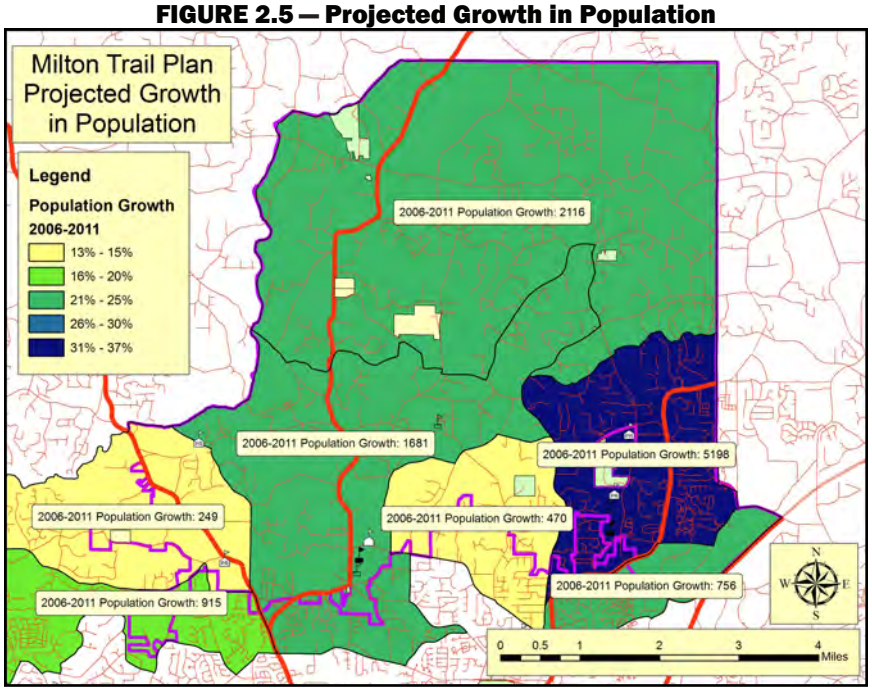


FIGURE 2.5 — Projected Growth in Population



MAJOR DESTINATIONS

Figures 2.6 and 2.7 show major trip destinations within and near the City. Figure 2.6 was largely compiled by existing GIS data sets and committee members' knowledge of the City. Included are current public and private schools and sites for planned schools including an elementary school at the intersection of Wood Road and Birmingham Highway and a high school (or middle school and high school combination) west of Freemanville Road and north of Wood Road. Parks on the map include the large new park northwest of Birmingham Crossroads, and the City of Alpharetta's North Park. Other destinations are churches, retail centers, country clubs, and major subdivisions. Destinations were divided into four categories depending on the expected number of trips if the destination were linked to a citywide trails network. Minor destinations were placed in the low category (1-5 trips per day). Grocery stores and other retail concentrations were placed in the medium category (5-15 trips per day). Private schools and smaller recreation facilities were assigned to the high category (15-30 trips per day). All public schools and parks were assigned to the very high category (over 30 trips per day) and are shown on the map with their own symbologies. These trip assignment categories were reviewed by the committee and were used in conducting the latent demand analysis (Figure 2.9).

FIGURE 2.6 — Major Destinations

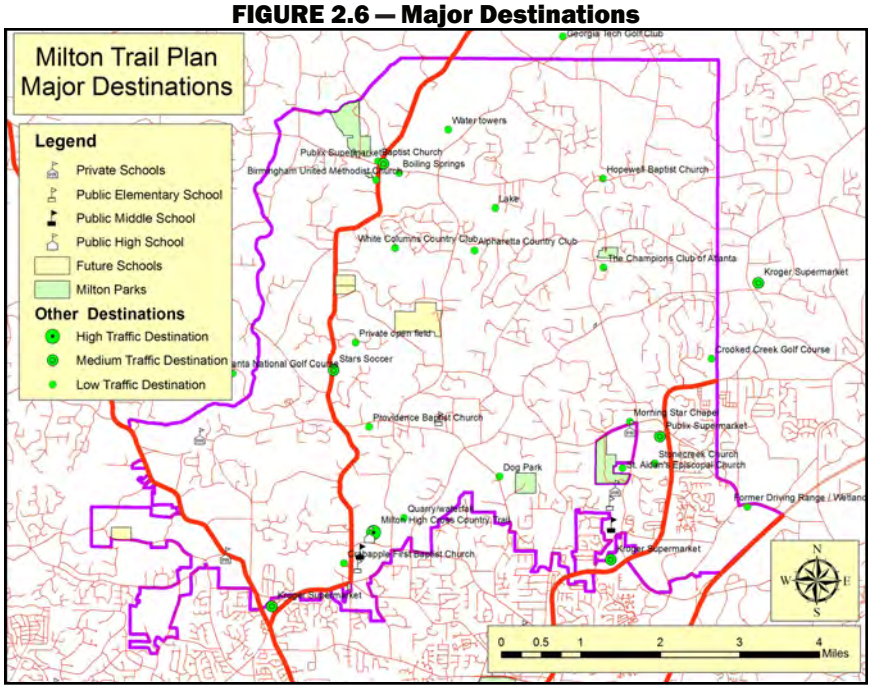
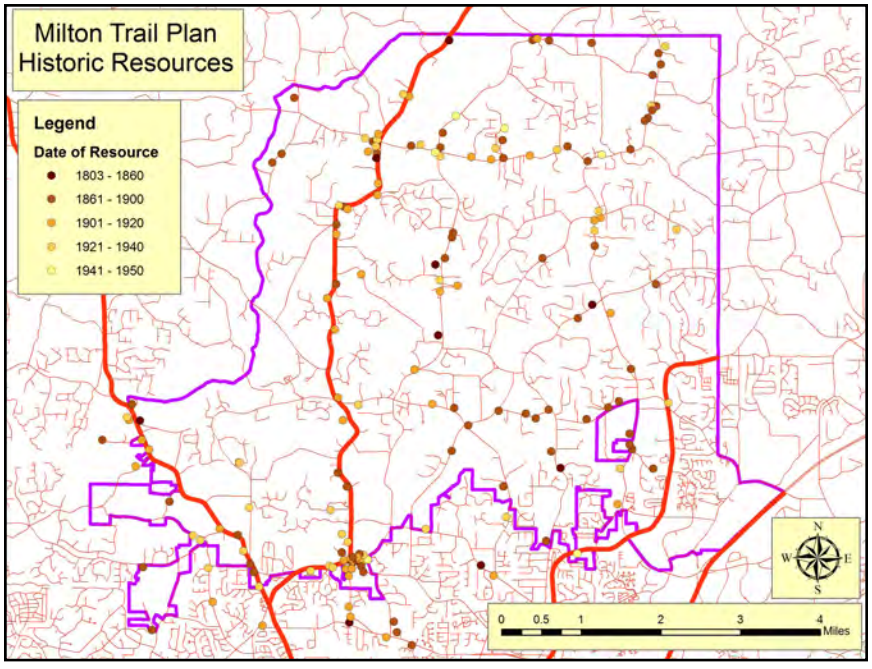


Figure 2.7 shows historic resources, largely buildings, in the City based upon a 1995 inventory. A number of these resources are no longer extant, but the overall pattern of placement remains. The darker the shading for the resource, the earlier the date. The 19th century resources (darkest two shades of brown) are scattered, but tend to locate along historic roads. Resources dating to the 20th century are especially clustered in the Crabapple Crossroads area, a likely location for a city historic district.

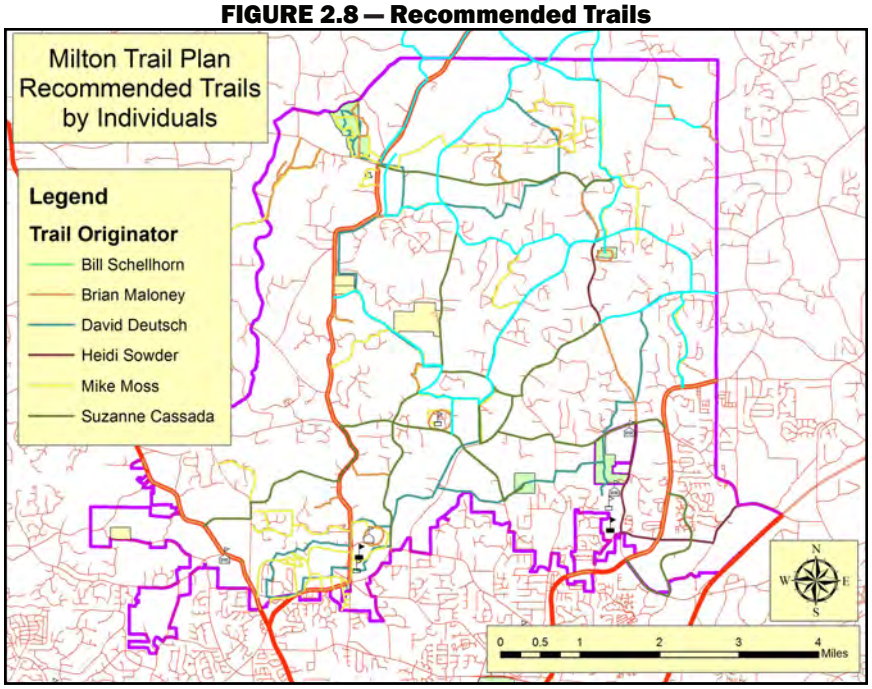
FIGURE 2.7 — Historic Resources



C. Recommendations from Analysis

After reviewing these materials, individuals on the committee were invited to recommend locations for bicycle/pedestrian trails throughout the county. Some committee members created trail maps base maps provided to them; others created text descriptions for recommended route locations. These recommendations were digitized into the project GIS and displayed simultaneously as seen on Figure 2.8. During two extended meetings the committee members then developed a consensus, comprehensive map of recommended routes throughout the City.

FIGURE 2.8 — Recommended Trails



The comprehensive trail network included 70 miles of trails, so it was necessary to select priorities within the network to be recommended for funding within the City's five-year capital improvements program. Latent demand analysis was used to assist in the prioritization process. Figure 2.9 shows the results of a latent demand analysis conducted for the comprehensive network. This analysis attempts to represent the predicted level of traffic for each network segment, if that segment were to be constructed. For each segment the potential number of trips for all destinations within a one-mile radius were totaled and assigned to the segment. The results, not surprisingly, show highest demand in the areas around the two clusters of existing schools near Crabapple Crossroads, Cogburn Road, and the planned cluster near Wood Rood.

FIGURE 2.9 — Latent Demand Analysis

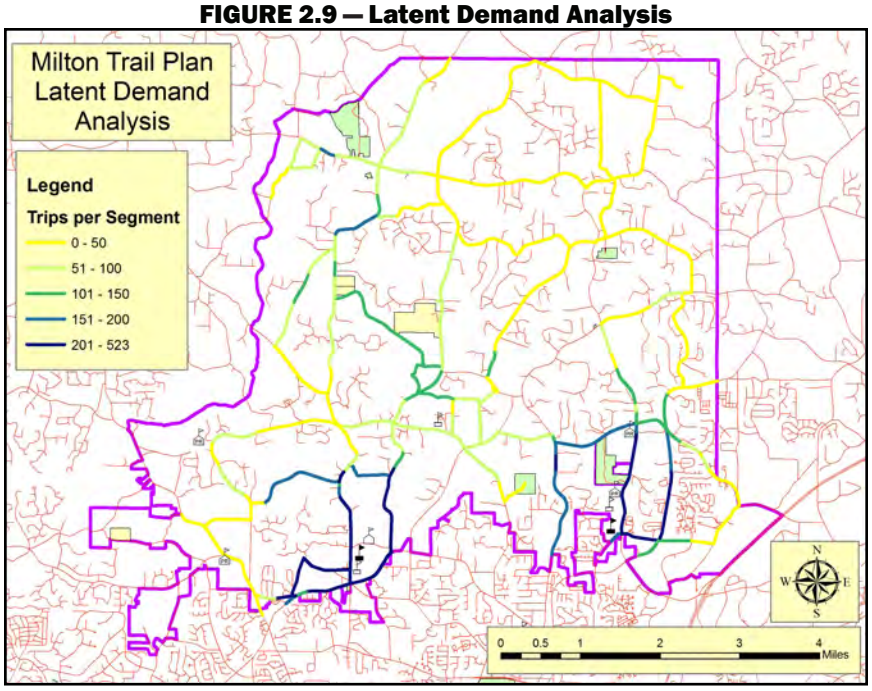
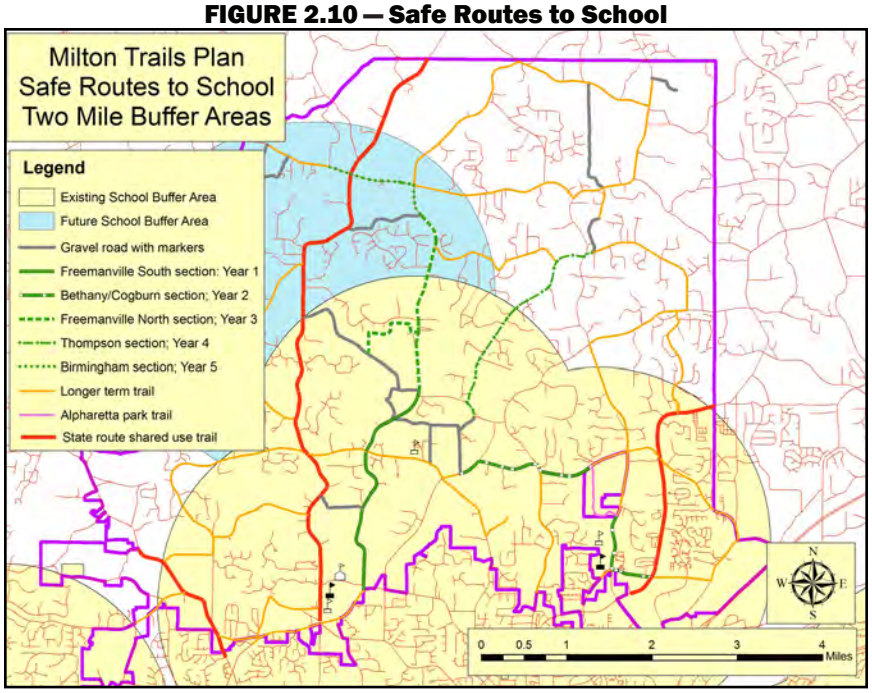


Figure 2.10 shows the results of an analysis related to the Safe Routes to School program. The Safe Routes program will fund shared use trails if those trails are part of a jurisdiction's Safe Routes to School plan and are located within two miles of an elementary or middle school. The yellow area on the map shows a two-mile buffer around the area's elementary and middle schools, and the blue area shows the additional area added from a buffer around the planned Birmingham Highway elementary school site. The Freemanville South and Bethany/Cogburn sections of the trail, along with the southern portion of the Freemanville North and Thompson sections all currently qualify for Safe Routes funding. With construction of the new elementary school, the entire core network will qualify, except for the northernmost mile of the Thompson trail.

FIGURE 2.10 — Safe Routes to School




Milton
Trail

Section III:
Design Framework for Trail Systems

A. Major Design Facilities

There are several types of facilities that are designed to accommodate pedestrian and bicycle travel, including sidewalks, greenways, multi-use trails, and bicycle lanes and wide shoulder lanes. Each form has certain characteristics, for example:

1. **Sidewalks**
    a. Traditional option for pedestrians
    b. Paved with concrete, can have three-foot separation from road or less
    c. Many jurisdictions make riding bicycles on sidewalks illegal
2. **Greenways**
    a. Often follow streams, rail lines, transmission lines or other linear features
    b. Require access easements across private property
    c. Take considerate time to acquire, plan, and construct
    d. Can be a variety of surfaces
3. **Multi-Use Trails**
    a. Often follow established roads, but separated by at least 6 feet
    b. Usually paved with asphalt, 10-12 feet wide
    c. Street crossings are particular design and safety challenges
4. **Bicycle Lanes and Wide Shoulder Lanes**
    a. Allow serious bicyclists and commuter bicyclists to move at speed
    b. Safest option for experienced bicyclists
    c. Does not provide options for pedestrians.

The deliberations of the Citizens' Advisory Committee resulted in the selection of the multi-use trail approach; therefore, this section focuses on national and state design guidelines for multi-use trails. This information can be used to develop Milton-specific trail standards. Sources for the information can be found at the end of the section (Table 3.3).

B. National Design Guidelines

AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS (AASHTO)

GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES

According to the *Guide for the Development of Bicycle Facilities* by AASHTO, shared use paths "should be used to serve corridors not served by streets and highways or where wide utility or former railroad right-of-way exists, permitting such facilities to be constructed away from the influence of parallel streets." Shared use paths allow transportation opportunities not provided by the road infrastructure.

Shared use paths should not be located immediately adjacent to roadways due to the following problems associated with this location:

1. Unless separated, they require one direction of bicycle traffic to ride against motor vehicle traffic, contrary to normal rules of the road.
2. When the path ends, bicyclists going against traffic will tend to continue to travel on the wrong side of the street. Likewise, bicyclists approaching a shared use path often travel on the wrong side of the street in getting to the path. Wrong-way travel by bicyclists is a major cause of

bicycle/automobile crashes and should be discouraged at every opportunity.

3. At intersections, motorist entering or crossing the roadway often will not notice bicyclists approaching from their right, as they are not expecting contra-flow vehicles. Motorists turning to exit the roadway may likewise fail to notice the bicyclist. Even bicyclists coming from the left often go unnoticed, especially when sight distances are limited.
4. Signs posted for roadway users are backwards for contra-flow bike traffic; therefore, these cyclists are unable to read the information without stopping and turning around.
5. When the available right-of-way is too narrow to accommodate all highway and shared use path features, it may be prudent to consider a reduction of the existing or proposed widths of the various highway (and bikeway) cross-sectional elements (i.e., land and shoulder widths, etc.). However, any reduction to less than AASHTO Green Book (or other applicable) design criteria must be supported by a documented engineering analysis.
6. Many bicyclists will use the roadway instead of the shared use path because they have found the roadway to be more convenient, better maintained, or safer. Bicyclists using the roadway may be harassed by some motorists who feel that in all cases bicyclists should be on the adjacent path.
7. Although the shared use path should be given the same priority through intersections as the parallel highway, motorists falsely expect bicyclists to stop or yield at all cross-streets and driveways. Efforts to require or encourage bicyclists to yield or stop at each cross-street and driveway are inappropriate and frequently ignored by bicyclists.
8. Stopped cross-street motor vehicle traffic or vehicles exiting side streets or driveways may block the path crossing.
9. Because of the proximity of motor vehicle traffic to opposing bicycle traffic, barriers are often necessary to keep motor vehicles out of shared use paths and bicyclists out of traffic lanes. These barriers can represent an obstruction to bicyclists and motorists, can complicate maintenance on the facility, and can cause other problems as well.

According to the *Guide*, "when two-way shared use paths are located adjacent to a roadway, wide separation between a shared use path and an adjacent highway is desirable to demonstrate to both the bicyclist and the motorist that the path functions as an independent facility for bicyclists and others." If the shared use path is located within 5 feet (1.5 m) of the roadway, the *Guide* suggests a physical barrier to separate the two transportation systems. The barrier should "be a minimum of 1.1 m (42 inches) high, to prevent bicyclists from toppling over it. A barrier between a shared use path and an adjacent highway should not impair sight distance at intersections, and should be designed to not be a hazard to errant motorists."

The following are AASHTO's *Guide for the Development of Bicycle Facilities Areas* design guidelines relating to shared use pathways:

1. **Surface**
    a. Bicycles need the same firmness and stability as wheelchairs
    b. Skaters require a smooth, paved surface
    c. Most shared use paths are paved, although crushed aggregate surfaces are also used.
2. **Clear Tread Width**
    a. Shared use paths require a minimum 10 foot (3 m) width, plus a 2 foot (0.6 m) safety buffer on both sides of the path (Figure 3.1). An 8 foot (2.4 m) width may be allowed in low use facilities.
    b. Posts/bollards installed to restrict motor vehicle traffic should be spaced 5 feet (1.5 m) apart. They should be brightly painted and reflectorized for visibility. When more than one post/bollard is used, an odd number shall be used to designate a center point.
3. **Surface Openings**
    The AASHTO Guide does not specify a maximum dimension for surface opening, but openings should be minimized.
    a. Openings should not permit a bicycle wheel to enter.
    b. Grates should be flush with the surface.
    c. Elongated openings should be perpendicular to the direction of travel.
    d. Unavoidable openings should be clearly marked.

4. **Protruding Objects**
    a. Protruding objects should not exist within the clear tread width of a shared use path.
    b. Vertical clearance should be a minimum of 10 feet (3 m) or the full clear width.
    c. Unavoidable vertical barriers or obstructions, such as abutments, piers, and other features, should be clearly marked.
5. **Tread Obstacles**
    Tread obstacles are hazardous to bicyclists and skaters. The surface of the shared use path should be smooth and should not have tread obstacles.
6. **Passing Space**
    Shared use paths should have a minimum clear width of 10 feet (3 m), with an exception for 8 feet (2.4 m).
7. **Slopes**
    a. Cross Slope— For drainage, shared use paths should have a minimum of 2% (1:50) cross slope on a paved surface. Curves on shared use paths may require super elevation beyond 2% (1:50) for safety reasons. A limited cross slope is suggested for accessibility reasons.
    b. Running Slope— Running slopes on shared paths should be kept to a minimum. Grades greater than 5 % are undesirable, while grades steeper than 3% may not be practical for paths with unpaved surface material. Recommended grade lengths are (if possible):
        i. < 5% (< 1:20)—any length
        ii. 5-6% (1:20–16.7)—up to 800 feet (240 m)
        iii. 7% (1:14.3)—up to 400 feet (120 m)
        iv. 8% (1: 12.5)—up to 300 feet (90 m)
        v. 9% (1:11.1)—up to 200 feet (60 m)
        vi. 10% (1:10)—up to 100 feet (30 m)
        vii. 11% + (1:9.1)—up to 50 feet (15 m)
8. **Resting Intervals**
    The AASHTO Guide does not address resting intervals.
9. **Edge Protection**
    The AASHTO Guide does not address edge protection. However, the Guide suggests a minimum railing height of 42 inches (1.1 m) needed for safety reasons.
10. **Signs**
    Guidance on signing and marking is provided in the *Manual on Uniform Traffic Control Devices* (*MUTCD*)[1], incorporated by reference as a Federal regulation (23 CFR 655.601). Part 4 (Signals) was updated in March 2000, which includes provisions for pedestrian signals for individuals with disabilities.

FIGURE 3.1 — Cross Section of Two-Way Shared Use Path on Separated Right-of-Way

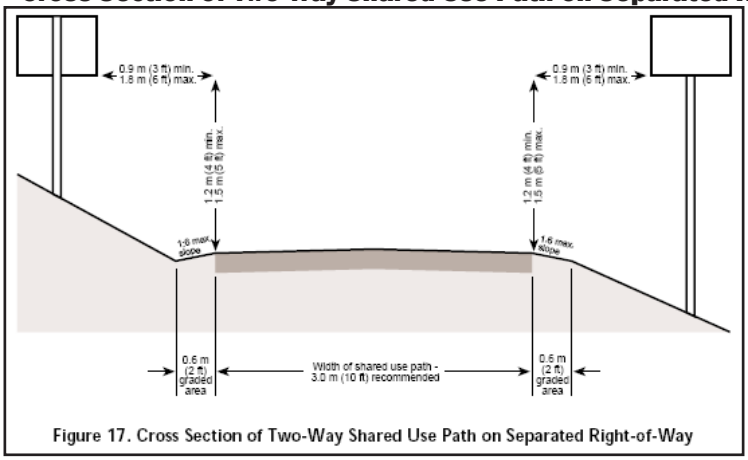


Figure 17. Cross Section of Two-Way Shared Use Path on Separated Right-of-Way

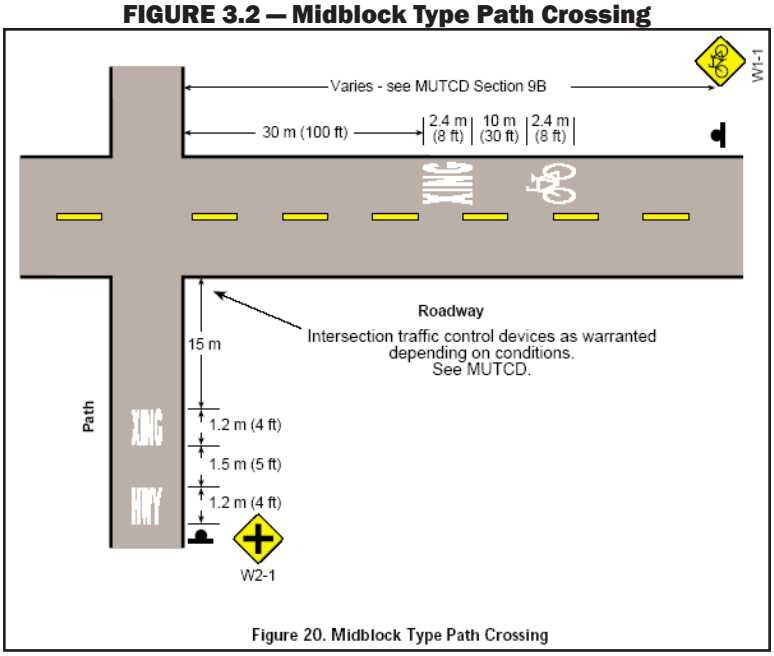
Source: AASHTO *Guide for the Development of Bicycle Facilities*.
Available online: www.communitymobility.org/pdf/aashto.pdf

1 Available online: http://mutcd.fhwa.dot.gov/kno-2003r1.htm

The AASHTO *Guide* identifies three types of path-roadway intersections: midblock, adjacent path, and complex intersections.

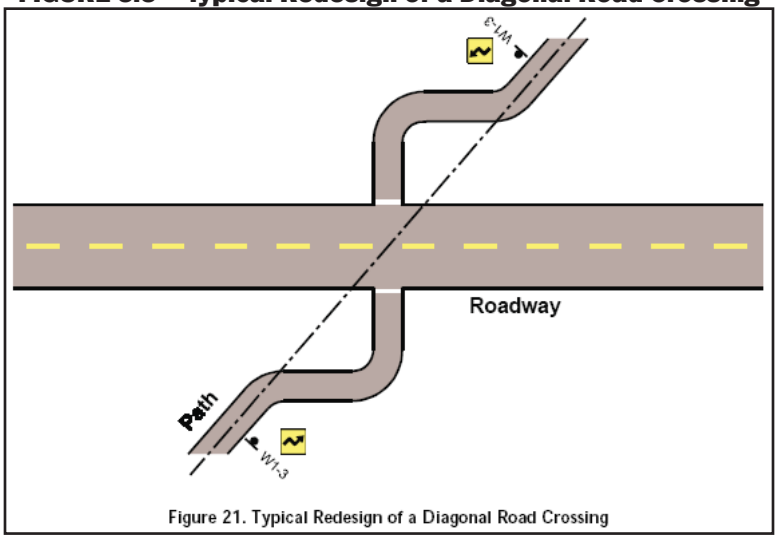
- **Midblock Intersections**
  Midblock intersections should be located far enough from existing intersections to be clearly identified as separate from the activity that occurs as automobiles approach the intersections (Figure 3.2). Variables to consider when addressing this type of intersection include: right-of-way assignment, traffic control devices, sight distances of bicyclists and automobile drivers, refuge island use, access control and pavement marking. One variation on this type of crossing is a skewed crossing, a crossing with an angle of a minimum of 45-degrees, to minimize right-of-way requirements (Figure 3.3).

FIGURE 3.2 — Midblock Type Path Crossing



Source: AASHTO *Guide for the Development of Bicycle Facilities*.
Available online: www.communitymobility.org/pdf/aashto.pdf

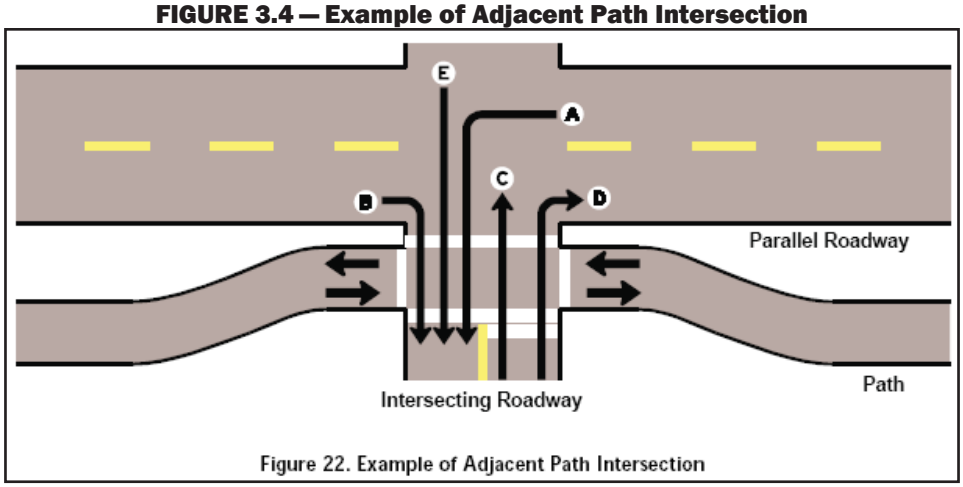
FIGURE 3.3 — Typical Redesign of a Diagonal Road Crossing



Source: AASHTO *Guide for the Development of Bicycle Facilities*.
Available online: www.communitymobility.org/pdf/aashto.pdf

- **Adjacent Paths**
  Adjacent paths occur where a shared use path crosses a roadway at an existing intersection between two roadways. Shared use path crossings should be integrated in the totality of the intersection so that motorists and bicyclists/pedestrians recognize each other at the intersection (Figure 3.4). Variables important to this type of intersection include: right-of-way assignment, traffic control devices, separation distance between the roadway and the shared use path, and sight line distances.

FIGURE 3.4 — Example of Adjacent Path Intersection



Source: AASHTO *Guide for the Development of Bicycle Facilities*.
Available online: www.communitymobility.org/pdf/aashto.pdf

- **Complex Intersections**
  Complex intersections constitute all other path-roadway or driveway connections and may include a variety of configurations. Treatments to be considered when dealing with complex intersection crossings include: move the crossing, install a signal, change signalization timing, and/or provide a refuge island and make a two-step crossing for path users.

UNITED STATES ACCESS BOARD/REGULATORY NEGOTIATION COMMITTEE

ACCESSIBILITY GUIDELINES FOR OUTDOOR DEVELOPED AREAS

The Architectural and Transportation Barriers Compliance Board (Access Board) is responsible for the creation of design guidelines dealing with accessibility under the Americans with Disabilities Act of 1990, ensuring that new construction and redevelopment of facilities are accessible to and usable by individuals with disabilities. The first guidelines were illustrated in the *Americans with Disabilities Act Accessibility Guidelines (ADAAG)* in 1991. Titles II and III of the *Guidelines* covered the design of recreational facilities; however, some facilities with unique features were not addressed in the Guidelines. Therefore, in June 1997, the Regulatory Negotiation Committee on *Accessibility Guidelines for Outdoor Developed Areas* was established to address these design issues. It was composed of individuals with disabilities; owners/operators of outdoor developed facilities; Federal, state, and local land management agencies; designers; and special interest trail groups.

The Committee identified the following basic principles to guide the development of the accessibility guidelines:

1. Protect resource and environment;
2. Preserve experience;
3. Provide for equality of opportunity;
4. Maximize accessibility;

5. Be reasonable;
6. Address safety;
7. Be clear, simple, and understandable;
8. Provide guidance;
9. Be enforceable and measurable;
10. Be consistent with ADAAG (as much as possible); and
11. Be based on independent use by persons with disabilities.

The *Accessibility Guidelines for Outdoor Developed Areas* include "consideration of the latest information, design, and construction practices in existence." The *Guidelines* also include guidelines for "trails used as transportation facilities" or shared use paths, yet suggests that "bicyclists and skaters have design needs which exceed the minimum guidelines for trails." Therefore, the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities* serves as the primary design guide for the development of bicycle and shared use facilities.

According to the *Accessibility Guidelines for Outdoor Developed Areas*, accessible trails "include those newly constructed and altered trails that meet all of the provisions of section 16.2," the accessibility design standards applying to trails. The following are the accessibility guidelines relating to trails:

1. **Surface**
   The trail surface shall be firm and stable.
2. **Clear Tread Width**
   The clear tread width of the trail shall be 36 inches (915 mm) minimum, with an exception for 32 inches (815 mm).
3. **Surface Openings**
   a. Openings in trail surfaces shall be of a size that does not permit passage of a ½ inch (13 mm) diameter sphere.
   b. Elongated openings shall be placed so that the long dimension is perpendicular or diagonal to the dominant direction of travel.
   c. Exceptions include those parallel direction elongated openings which do not permit the passage of a ¼ inch (6 mm) sphere or a regular opening that does not permit the passage of a ¾ inch (19 mm) sphere.
4. **Protruding Objects**
   Protruding objects on trails shall comply with ADAAG 4.4.1 and shall have 80 inches (2030 mm) minimum clear head room.
5. **Tread Obstacles**
   Where tread obstacles exist, they shall not exceed 2 inches (50 mm) high maximum, with an exception up to 3 inches (75 mm).
6. **Passing Space**
   a. Where the clear tread width of the trail is less than 60 inches (1525 mm), passing spaces shall be provided at intervals of 1000 feet (300 m) maximum.
   b. Passing spaces shall be either a 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum space, or an intersection of two walking surfaces which provide a T-shaped space complying with ADAAG 4.2.3 provided that the arms and stem of the T-shaped space extend at least 48 inches (1220 mm) beyond the intersection.
7. **Slopes**
   Slopes shall comply with 16.2.7.1 and 16.2.7.2
   a. Cross Slope- The slope shall not exceed 1:20 (5%) maximum, with exceptions for open drains up to 1:10 (10%).
   b. Running Slope- Running slope of trail segments shall comply with one or more of the provisions of this section. No more than 30 percent of the total trail length shall exceed a running slope of 1:12.
      i. 1:20 (5%)—any length;
      ii. 1:12 (8.33%)—for up to 200 feet;
      iii. 1:10 (10%)—for up to 30 feet;

iv. 1:8 (12.5%)—for up to 10 feet;
v. No more than 30% of the total trail length shall exceed 1:12

8. **Resting Intervals**
    a. Resting intervals shall be 60 inches (1525 mm) minimum in length, shall have a width at least as wide as the widest portion of the trail segment leading to the resting interval, and have a slope not exceeding 1:20 in any direction.
    b. Resting areas are required where trail running slopes exceed 1:20 (5%), at intervals no greater than the lengths permitted under running slope.
9. **Edge Protection**
    a. Where edge protection is provided along a trail, the edge protection shall have a height of 3 inches (75 mm) minimum.
    b. Handrails are not required.
10. **Signs**
    a. Newly constructed and altered trails and trail segments complying with 16.2 shall be designed with a symbol"*" at the trail head and all designated access points. Signs identifying accessible trail segments shall include the total distance of the accessible segment and the location of the first point of departure from the technical provisions.
    b. No traffic control sign information.

UNITED STATES DEPARTMENT OF TRANSPORTATION/FEDERAL HIGHWAY ADMINISTRATION (FHWA)

DESIGN GUIDANCE: ACCOMMODATING BICYCLE AND PEDESTRIAN TRAVEL- A RECOMMENDATION APPROACH

The United States Department of Transportation created the *Design Guidance* to focus on three key principles:

1. A policy statement that bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist;
2. An approach to achieving this policy that has already worked in state and local agencies; and
3. A series of action items that a public agency, professional association, or advocacy group can take to achieve this overriding goal of improving conditions for bicycling and walking.

The *Design Guidance* addresses bicycle/pedestrian pathways in different settings, from rural to urban. It suggests that these types of pathways should be incorporated into all new construction and reconstruction projects. The *Design Guidance* also determines that the design of the facilities for bicyclists and pedestrians should follow design standards to meet the most effective, efficient and safe design possible. In order to implement these design standards, the *Design Guidance* suggests that the "design manuals" should be re-written in order to address the wide variety of new construction and reconstruction projects, incorporating both practical and "engineering judgment" to the designs suggested.

The *Design Guidance* suggests four main actions to be taken to incorporate bicycle and pedestrian pathways into overall transportation design:

1. Define the exceptional circumstances in which facilities for bicyclists and pedestrians will NOT be required in all transportation projects.
2. Adopt new manuals, or amend existing manuals, covering the geometric design of streets, the development of roadway safety facilities, and design of bridges and their approaches so that they comprehensively address the development of bicycle and pedestrian facilities as an integral element of the design of all new and reconstructed roadways.
3. Adopt stand-alone bicycle and pedestrian facility design manuals as an interim step towards the adoption of new typical sections or manuals covering the design of streets and highways.
4. Initiate an intensive re-tooling and re-education of transportation planners and engineers to make them conversant with the new information required to accommodate bicyclists and

pedestrians. Training should be made available for, if not required of, agency traffic engineers and consultants who perform work in this field.

DESIGNING SIDEWALKS AND TRAILS FOR ACCESS: PART I OF II: REVIEW OF EXISTING GUIDELINES AND PRACTICES

This *Report* addresses the accessibility of sidewalks and trails in the United States. The *Report* focuses on the travel characteristics of subsets of the population who have different travel patterns and characteristics of the rest of the population, including people with disabilities, children, and older adults. Design practices relating to sidewalks and trails are analyzed in terms of accessibility, engineering and construction. All design guidelines reference AASHTO's *Guide for the Development of Bicycle Facilities Areas* and the *Americans with Disabilities Act Accessibility Guidelines*.

B. State Design Guidelines

GEORGIA DEPARTMENT OF TRANSPORTATION (GDOT)

GDOT DESIGN POLICY MANUAL

According to the Georgia Department of Transportation's *Design Policy Manual*, "at a minimum, projects shall meet all American Association of State Highway and Transportation Officials (AASHTO) guidelines and requirements." Bicycle lanes and improvements are incorporated into all widening and reconstruction projects in Georgia if a bikeway currently exists or if the project is located on an approved Bicycle Route. The State Bicycle Route map is located on the GDOT website at http://www.dot.state.ga.us/dot/plan-prog/planning/projects/bicycle/maps/index.shtml.

GDOT PEDESTRIAN AND STREETSCAPE GUIDE

GDOT has also created the *Pedestrian and Streetscape Guide* to "provide direction to design professionals, developers, municipalities, and other regarding the design, construction, and maintenance of pedestrian facilities." The *Pedestrian and Streetscape Guide* addresses the issues and actions raised in GDOT's 1995 Bicycle and Pedestrian Plan. This *Guide* can be found at GDOT's website at http://www.dot.state.ga.us/bikeped/ped_streetscape_guide/.

Toolkit 4 of the *Pedestrian and Streetscape Guide* addresses the design standards and guidelines of trails and paths. The text references the US Architectural and Transportation Barriers Compliance Board (Access Board) and the FHWA for guidelines concerning accessibility issues of disabled individuals. The *Guide* also references AASHTO's *Guide for the Development of Bicycle Facilities* for overall design standards relating to bicycle paths and shared use paths.

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT)

WSDOT PEDESTRIAN FACILITIES GUIDEBOOK

According to the *Washington State Department of Transportation's Pedestrian Facilities Guidebook*, "When trails and pathways must be shared by pedestrians and bicyclists, they need to be designed in accordance with applicable standards (refer to WSDOT and AASHTO design requirements)." Issues to be addressed when designing safe trails include:

- Horizontal and vertical alignment to ensure clear lines of sight for pedestrians and bicyclists.
- Wide shoulders, 0.6 meters (2 ft) minimum on each side, to provide stopping and resting areas and allow for passing, and widening at curves.
- Avoidance of view obstructions at edges of the trail by placing signs, poles, utility boxes, garbage cans, benches, and other elements away from the edge of the path and using low-growing landscaping or high-branching trees.

- Use of bicycle speed limits.
- Use of delineation and separation treatments.
- Signing and marking (refer to the Manual on Uniform Traffic Control Devices[2]): a 10-centimeter (4-inch) wide center line stripe may be considered for multi-use pathways with heavy volumes of pedestrians and bicyclists, on curves with restricted sight distance, and on pathways where nighttime use is expected; edge lines can also be beneficial on pathways experiencing nighttime use.

Figures 3.5 through 3.12 and Tables 3.1 and 3.2 document the design guidelines suggested by the *Washington State Department of Transportation's Pedestrian Facilities Guidebook.*

FIGURE 3.5 — Accessible Trail/Pathway

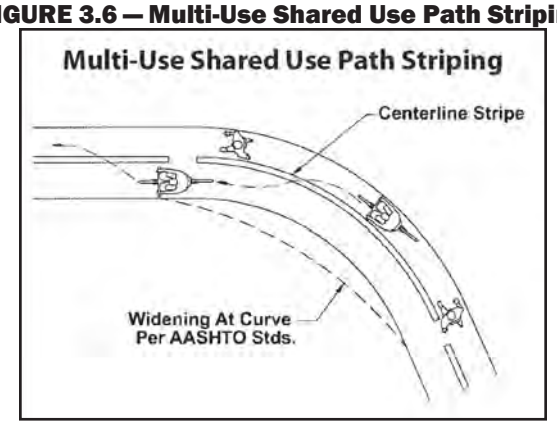
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

TABLE 3.1 — Design Guidelines for Recreational Trails

DESIGN GUIDELINES FOR RECREATIONAL TRAILS			
	Levels of Accessibility		
Design Element	**Easy**	**Moderate**	**Difficult**
Surfacing	Paved–Asphalt/Concrete Boardwalk with ramped or level entry	Compacted crushed rock or compacted dry earth	Varies, but needs to be firm and stable
Clear Width	1.2 meters (48 in)	0.9 meters (36 in)	0.7 meters (28 in)
Sustained Running Slope	5 percent	8.3 percent	12.5 percent
Maximum Grade for a Maximum Distance of	8.3 percent * 9.1 meters (30 ft)	10 - 14 percent 15.2 meters (50 ft)	20 percent 15.2 meters (50 ft)
Cross Slope Maximum	2 percent	3 percent	5 percent
Passing Space Interval	61 meters (200 ft) maximum	91 meters (300 ft) maximum	122 meters (400 ft) maximum
Rest Area Interval	122 meters (400 ft) maximum	274 meters (900 ft) maximum	366 meters (1,200 ft) maximum
Small Level Changes	1.3 centimeters (0.5 in) maximum	2.6 centimeters (1 in) maximum	7.6 centimeters (3 in) maximum
** If the pathway is designated as an accessible route of travel on the site, handrails are required on both sides of the pathway wherever the grade exceeds 5 percent.* *Source: Adapted from Universal Access to Outdoor Recreation, A Design Guide.*			

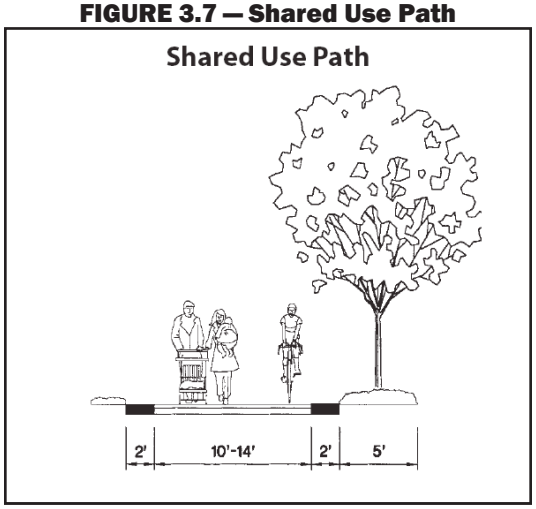
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.6 — Multi-Use Shared Use Path Striping



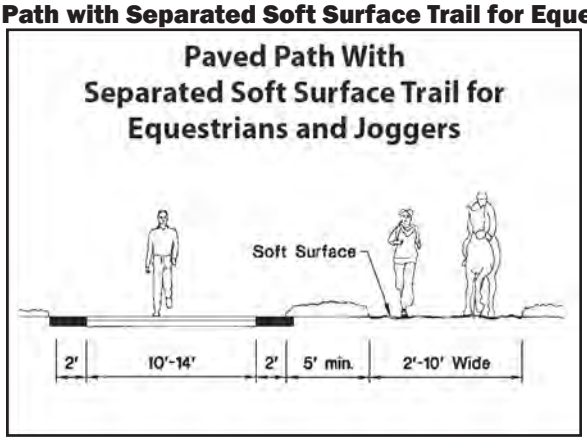
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.7 — Shared Use Path



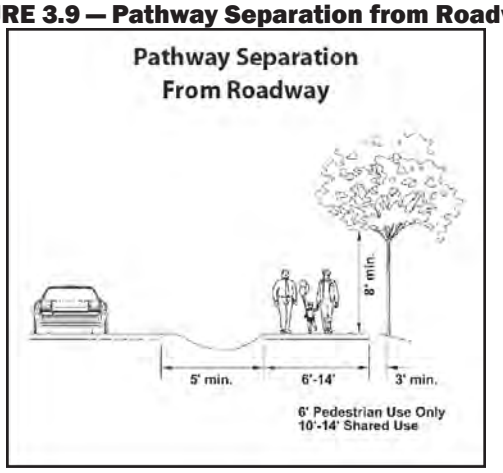
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.8 — Paved Path with Separated Soft Surface Trail for Equestrians and Joggers



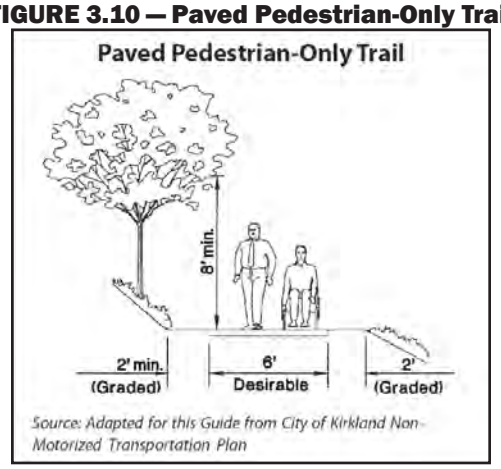
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.9 — Pathway Separation from Roadway



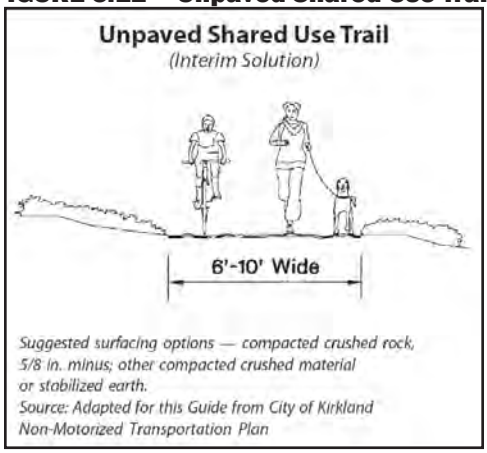
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.10 — Paved Pedestrian-Only Trail



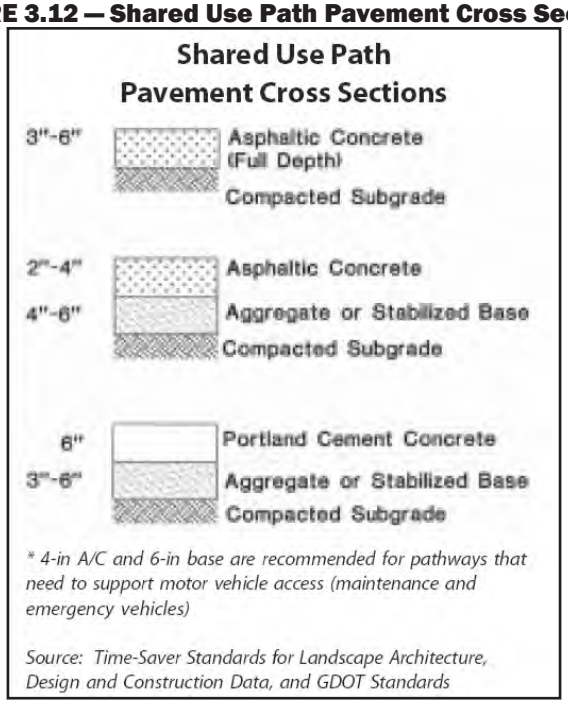
Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.11 — Unpaved Shared Use Trail



Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook.*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

FIGURE 3.12 — Shared Use Path Pavement Cross Sections



Source: ***Washington State Department of Transportation Pedestrian Facilities Guidebook.***
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

TABLE 3.2 — Recommended Dimensions for Trails and Pathways

RECOMMENDED DIMENSIONS FOR TRAILS AND PATHWAYS		
Trail/Pathway Element	Recommended Dimensions	Comments
Multi-Use Pathway Width (two-way, shared with bicyclists)	3.0 m (10 ft) minimum 3.7 m (12 ft) desirable 4.3 m (14 ft) optimum	Minimum width should only be used where volumes are low and sight distances are good; width should be based on relative speed of users; higher speed users (bicyclists and skaters) require greater widths.
Roadway Separation	1.5 m (5 ft) minimum	Minimum separation for parallel, adjacent path; a physical barrier should be installed where minimum separation cannot be met.
Shoulders	0.3 m (1 ft) minimum (peds only) 0.6 m (2 ft) minimum (multi-use)	Shoulders provide pull-off/resting and passing space; should be graded to the same slope as the path; minimum shoulder width of 0.3 m (1 ft) should only be used in constrained areas.
Additional Lateral Clearance Each Side of Shoulder	0.3 m (1 ft) minimum* 0.6 m (2 ft) desirable*	Lateral clearance is necessary for safe operation on either side of a multi-use path; should be graded to the same slope as the path.
Vertical Clearance	2.4 m (8 ft) minimum 3.0 m (10 ft) desirable	Necessary for good visibility and clearance for bikes/horses on multi-use pathways.
Paved Pedestrian-Only Path Width	1.5 m (5 ft) minimum 1.8 m (6 ft) desirable	These pathways are for exclusive use by pedestrians.
Unpaved Pedestrian-Only Path Width	0.6 m (2 ft) minimum 1.2 - 1.8 m (4 - 6 ft) desirable	Best as limited purpose facility in rural or semi-primitive areas; can provide interim solution; minimum width should only be used in constrained areas.
Multi-Use Unpaved Path Width	1.8 m (6 ft) minimum 2.4 - 3.0 m (8 - 10 ft) desirable	Only suggested as an interim solution and not appropriate for high use trails; best in rural or semi-primitive areas.
Pedestrian Mall/Corridor (Urban) Width	3.0 m (10 ft) minimum 3.7 m (12 ft) desirable 4.6 m (15 ft) optimum	Pathways in urban areas or those that receive heavy use should be wide enough to accommodate several people walking side-by-side or groups of people walking in opposite directions.

** If less than 1.2 m (4 ft) total lateral clearance is provided (including shoulder) between the edge of trail, and there is a vertical grade drop greater than 0.8 m (30 in), steeper than 2:1, railing may be required. See discussion later in this toolkit section.*

Note: Refer to WSDOT, AASHTO, and your local agency for other guidelines and standards for multi-use pathway dimensions.

Source: This table was compiled based on research of various documents (see Resource Guide) and input from the Pedestrian Facilities Guidebook Advisory Group.

Source: *Washington State Department of Transportation Pedestrian Facilities Guidebook*
Available online: http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf

TABLE 3.3 — National and State Design Guidelines Summary

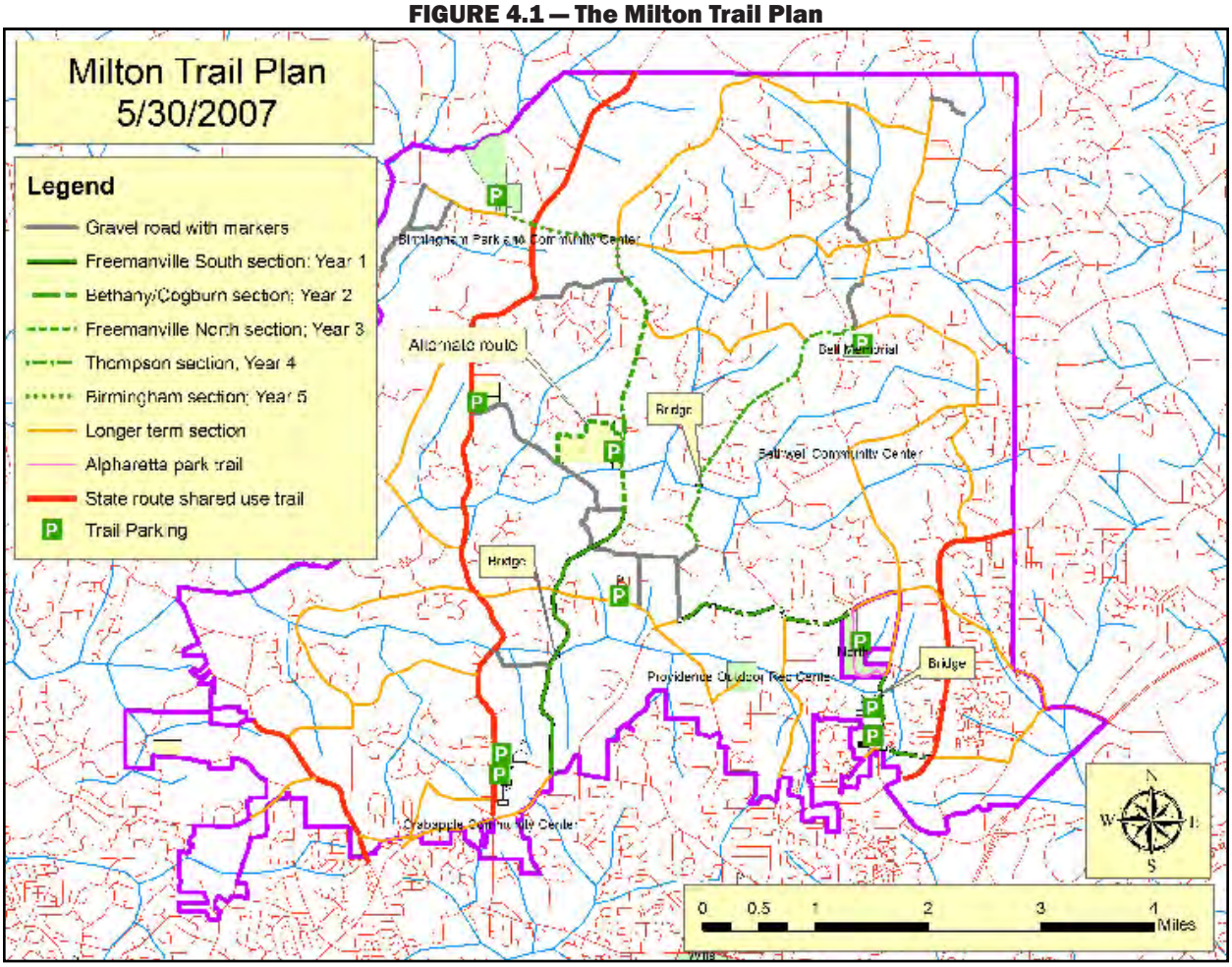
NATIONAL DESIGN GUIDELINES	
American Association of State Highway and Transportation Officials (AASHTO)	
Guide for the Development of Bicycle Facilities	www.communitymobility.org/pdf/aashto.pdf
United States Access Board / Regulatory Negotiation Committee	
Accessibility Guidelines for Outdoor Developed Areas	http://www.access-board.gov/outdoor/outdoor-rec-rpt.htm
United States Department of Transportation- Federal Highway Administration (FHWA)	
Design Guidance: Accommodating Bicycle and Pedestrian Travel- A Recommendation Approach	http://safety.fhwa.dot.gov/PED_BIKE/docs/pb_memodes_guid.pdf
Designing Sidewalks and Trails for Access: Part I of II: Review of Existing Guidelines and Practices	http://safety.fhwa.dot.gov/PED_BIKE/docs/ada.pdf
STATE DESIGN GUIDELINES	
Georgia Department of Transportation (GDOT)	
GDOT Design Policy Manual	http://www.dot.state.ga.us/dpm/desmanual/ch02/ch02.1.1.html
Washington State Department of Transportation (WSDOT)	
WSDOT Pedestrian Facilities Guidebook: Toolkit 4	http://safety.fhwa.dot.gov/PED_BIKE/docs/pedfacqblev.pdf


Milton
Trail

Section IV:
The Milton Trail Network

The Milton Trail Plan consists of two major components (Figure 4.1). The **core network** is recommended for funding in the City's five-year capital improvements program. This network begins in central Milton with 9.5 miles of existing gravel roads supplemented by 12.9 miles of highest priority shared use trails. It links together all the public schools, most private schools, and all the major parks in the city. The **comprehensive network** adds 48.6 miles of shared use trails and extends the core network into every area of the city. The following discussion will first describe in some detail the high priority core network, followed by a more general description of the comprehensive network, and conclude with presentation of the cost estimates for the core network.

FIGURE 4.1 — The Milton Trail Plan



A. The Core Network

The gravel roads of Milton are one of the City's most distinctive features and a major contributor to the City's rural character. They provide, in effect, an already established network of bicycle, pedestrian, and equestrian trails that are compatible, for the most part, with local, low-speed automobile traffic.

The gravel roads offer a number of substantial advantages for creating the Milton Trail network. In central Milton, gravel roads provide important east/west connections between major destinations such as current and future school locations. Yet, at the same time, these roads are intended to carry neighborhood-oriented rather than through traffic, so automobile speeds are somewhat limited by the nature of the surface and they can be further limited by regulation. This allows automobile, bicycle, equestrian, and pedestrian traffic to safely share these roads since drivers on gravel roads have substantially different expectations than when they drive upon traditional surface roads.

The core network includes Black Oak, Brittle, Cowart, Darby, Landrum, Nix, Phillips, Rowe, Summit, Westbrook, and Wood roads. Five of these gravel roads (Brittle, Cowart, Phillips, Summit, and Wood) provide the central east/west connector for the network. These roads provide direct access to the new Birmingham elementary school site, the new Freemanville high school (and possible middle school) site, and Summit Hill elementary school. A number of other gravel roads (Black Oak, Darby, Landrum, Nix, Rowe, and Westbrook) do not connect directly to the core network. However, these roads have been included in the core network because at minimal cost they can provide recreational opportunities, are placed in especially scenic locations, or provide linkages between hard-surface roads.

The Committee recommends that all the gravel roads of the core network be marked at each end with Milton Trail signs and maps showing the entire network. In addition, these roads should be maintained with gravel surfaces and speed limits limited to 15 miles per hour. The marking of these roads could be accomplished in a short period of time at minimal cost and would help inform citizens about the entire network.

Milton's gravel roads provide an excellent beginning point for the trails network, but they do not provide access to the major parks located in the city or to most of the existing schools. To connect these essential locations the Committee recommends that the core network also include 12.9 miles of shared use trails paralleling City of Milton roads.

Shared use trails can accommodate pedestrians, bicyclists, equestrians, and a variety of other forms of non-motorized transportation. They will be located within the City right-of-way but are separated from the automobile roadway usually by a minimum of five feet. They are 8 to 12 feet wide and can have gravel, asphalt, or concrete surfaces. They are designed to simultaneously accommodate pedestrians, basic-level bicyclists, child-level bicyclists and other forms of low-speed non-motorized transportation, hence the name "shared use."

In keeping with the rural character of Milton, the Committee recommends that the City's shared use trails be constructed with a gravel surface whenever possible. An asphalt surface should be used when drainage conditions, topography, financing requirements, or engineering concerns warrant a hard surface. The gravel surface trails should be constructed in such a way that an asphalt overlay could be added if the gravel surface becomes too difficult to maintain.

The construction cost of gravel trails is substantially lower than hard-surface trails. Gravel trail construction can be expected to cost somewhere in the range of 33% to 50% of the cost of asphalt trails. Annual maintenance costs for gravel are substantially higher, but vary widely based upon factors such as usage level, weather, topography, and drainage. For this reason it is likely that some areas where the initial trail surface is gravel and the maintenance cost is excessive may later need to be converted to asphalt.

The core network of shared use trails consists of five segments, each of which connects one or more major destinations to the network. These segments are located along roads with lower levels of traffic and lower speed limits. The Committee recommends, for example, that Freemanville Road serve as the major north/south network connector for the core network rather than Birmingham Highway. The Committee does recommend that, over the longer term, a trail be built along Birmingham Highway. However the heavy traffic and high speed along that route has led to the recommendation that Freemanville Road serve as the highest priority north/south linkage in the core network.

The Committee recommends that the core network be funded through a combination of City money allocated through the capital improvements program, state and federal transportation enhancement funds, and required construction by developers whose projects are located on the network. Each of the five shared use segments of the core network could be financed by one year's capital improvement financing providing 20% of the cost, with state and federal transportation enhancement funding providing 80%. Developer construction can be expected to make a substantial contribution to the network, speeding implementation and reducing costs. However it is impossible to predict which sections of the network will be built by developers. If the City is willing to allocate approximately $200,000 dollars per year over a five year period as part of the capital improvements program, and assuming the City's success at securing transportation enhancement funding, the core network could be financed and substantially completed over the next five years. Details on the estimated costs of the network are presented in Section V: Cost, Funding, and Implementation.

The five shared use segments of the core network have been identified as:

1. Freemanville South,
2. Bethany/Cogburn,
3. Freemanville North,
4. Thompsonville, and
5. Birmingham.

The first shared use trail recommended for construction is the Freemanville South section. This section is likely to be the most visible and most popular single link in the network. It parallels Freemanville Road running from Mayfield Road in the south to Phillips Road in the north. At the south end it will connect to Milton High, Northwestern Middle School, Crabapple Crossing Elementary School, and the existing Milton High cross country trail. At the north end it will connect to Phillips Road and Wood Road to the west, and to Summit Road and Brittle Road in the east. The Phillips Road/Wood Road connection will link the network to the new elementary school and new high school sites, and to Birmingham Highway. The Summit Road/ Brittle Road connection will link the network to Summit Hill Elementary and to Bethany Road. This is the single most important segment of the network since, in combination with the gravel roads, it connects so many of the current and planned schools attended by Milton children.

The Bethany/Cogburn segment is the second section recommended for construction. It will connect to the core network at the intersection of Brittle Road and Bethany Road, run east along Bethany Road, Hopewell Road, and Bethany Bend Road, to the north entrance of the City of Alpharetta's North Park. It will utilize the existing road through the park to the east entrance to the park then run southward along Cogburn Road to Webb Road. An alternative to the North park road would be use of sidewalks bordering the park to the north along Bethany Road and to the east along Cogburn Road.

The Bethany/Cogburn segment will provide access to Cogburn Woods Elementary and Hopewell Middle public schools, Kings Ridge and St. Francis private schools, and North Park. With the completion of the Freemanville South and Bethany/Cogburn trails, the every existing and planned public school in the City will be connected to the network making it possible for a child to walk or bike to school through elementary, middle, and high school. This can be achieved with the construction of only 5.2 miles of shared use trail.

The third recommended core segment is the Freemanville North segment. This section will connect to the Freemanville South trail at Phillips Road and run northward along Freemanville Road to Nix Road. This segment has been listed as the third priority because it provides the crucial network segment in extending the network toward Birmingham Crossroads. Given current and planned development in the area of Birmingham Crossroads it may be possible to achieve a developer-financed linkage between Nix Road and the Birmingham Crossroads area by the time the Freemanville North section is completed.

An alternate, and in several ways superior, configuration for the Freemanville North trail could be available with the cooperation of the Fulton County school board at the new Fulton County high school site. This site borders Wood Road in the west and Freemanville Road in the east. If a trail approximately one mile in length

could be established along the western and northern borders of the school property, it would no longer be necessary to build the Freemanville North trail section from Phillips Road north to the school property. As soon as a principal is assigned to this school it is crucial that he or she be approached concerning the possibility of routing the trail network across the school's property. The Milton High Cross Country Trail provides an excellent, nearby example of similar successful collaboration. Both alternatives are shown on the map, but given the uncertainty of working with Fulton County schools, the cost estimates assume trail paralleling the road.

The fourth recommended section is the Thompson Road segment. At the south end the trail will begin at the intersection of Brittle Road and Redd Road, follow Redd Road to the northwest for a short distance, then parallel Thompson Road to the northeast. It will end at the entrance to Bell Park. This segment will connect the baseball fields and other recreation facilities at the park to the network, giving children (and adults) the option to travel directly to this highly popular park without using an automobile.

Dinsmore Road provides an acceptable second alternative connection to link Bell Memorial Park to the trails network. This connection would begin at the intersection of Freemanville Road and Dinsmore Road, run east to Thompson Road, then east again to the park. The length of this alternative is 2.19 miles, about one-half a mile shorter than the direct Thompson Road connection. The committee, however, recommends the Thompson Road connection as the first choice since that route will connect more neighborhoods and more people to the network.

The final recommended segment is the Birmingham section. With future development of the new 200+ acre Birmingham Park, the retail node at the Crossroads, and several churches, the Birmingham Crossroads area will become the major destination in the northern part of the City. Some paths in the area have already been constructed, and others are likely to be built as part of new development in the area. It is crucial, though, that both the Crossroads and the park entrance be connected to the network, so in the fifth year any remaining segments should be built.

Depending on the pattern of future development in the area there are multiple possibilities for connecting this vital area to the network. One possibility is a connection running north from Nix Road to the Crossroads area somewhere east of Freemanville Road and west of Birmingham Highway, then westward through the Crossroads and to the park entrance. This connection would work well if there are large proposed developments in the area between Nix Road and Birmingham Road. Because the possibility and location of this alternative are uncertain, it is not shown on the map.

A second alternative is to begin at the intersection of Nix Road and Birmingham Highway, then northward along Birmingham Highway to Birmingham Crossroads. However, since Birmingham Highway is a state route, construction of a trail along this corridor would be more complex due to the involvement of the Georgia Department of Transportation.

The third option is the Committee's recommended alternative. This route begins at the intersection of Nix Road and Freemanville Road, runs north along Freemanville Road to Birmingham Road, then west along Birmingham Road to the Crossroads area and the new park. This is the recommended alternative because it involves only City roads and because some portions of sidewalk already exist near the Crossroads.

There was extensive discussion within the Committee concerning the timing of construction of the Birmingham section of the network. Some Committee members believed it would be better to build both the Freemanville North and Birmingham sections in year three of the plan due to the importance of the retail and recreational destinations near Birmingham Crossroads and possible cost savings. Other Committee members believed that the high level of activity at Bell Memorial Park and the advantage of having relatively even cost expenditures each year justify the completion of the Birmingham section later in the plan rather than earlier. The Committee, as a whole, recommends that the Birmingham segment be built in year five, since there are a number of alternative trail locations, and because determination of the best trail configuration may be dependent of the timing and location of future development. The Committee also

recommends that the Birmingham section of the trail be completed earlier in the plan if construction costs during the plan's first three years are lower than projected. The entire Committee affirmed the vital importance of the connecting the Crossroads area to the network within the five-year time horizon of the City's Capital Improvements Program (CIP).

With completion of the Birmingham section, the core network will connect all the public schools, many of the private schools, and the three major parks located within the City boundaries, as well as many of the neighborhoods in central Milton. Once the core network has been constructed, the Committee recommends that the trails system be extended into a comprehensive network connecting all areas of the City.

B. The Comprehensive Network

With completion of the core network of trails, the City of Milton will have connected many neighborhoods with many of the most important destinations in the City. However some areas of the county will yet not be connected to the network and some destinations will not yet be accessible from the network. The Committee, therefore, recommends that once the core network has been constructed that the trails be extended into a comprehensive, citywide network. The Committee also recommends that expansion of the network make use existing gravel roads wherever possible.

The comprehensive network consists of approximately 48.6 miles of additional shared use trails divided into two categories. First, 36.5 miles of the network parallel existing City roads and will be located in the City right-of-way. These trails could be financed through the same mechanisms as the core network, but by the time the core network is completed the City may have available additional means of financing, such as development impact fees. Because construction of the comprehensive network lies in the longer-term future, the committee has not recommended priorities among the many segments within this network.

Second, 12.1 miles of the comprehensive network are located along Georgia Department of Transportation state routes, including Arnold Mill Road, Birmingham Highway, and Cumming Highway. Although these roads have high traffic volumes, shared use paths paralleling these roads would be desirable although expensive to construct. Cumming Highway, in particular, has a high concentration of population, will be designated as a regional route in the forthcoming Atlanta Regional Commission bicycle and pedestrian study, and will connect to a planned Forsyth County trail. The committee's recommendations allow for the construction of either a shared use trail or separate bicycle and pedestrian facilities along Cumming Highway, since separate bike lanes and sidewalks may provide a better fit with the regional bicycle plan.

The committee recommends that the City seek changes in state transportation policy so that the Georgia Department of Transportation constructs shared use paths as part of major road projects whenever those paths are incorporated into a local government's officially adopted transportation plan, comprehensive plan, bicycle plan, pedestrian plan, or bicycle/pedestrian plan.

C. Committee Recommendations for Design Principles & Policies

During the course of its deliberations the Committee developed a set of recommendations for trail design principles and policies. Because the overall trail system consists of several different types of trails, the Committee recommendations are grouped by type of trail: gravel road, shared use trail parallel to state roads, shared use trail parallel to City roads, general policies, and rules for trail use.

Design principles for existing gravel roads to be incorporated into the trail system:

1. As soon as practicable, the City should utilize the City Milton logo to create trail endpoint signs with maps of the entire network and trail rules, and place markers at the ends of all gravel roads included in the core network.
2. Speed limits on the network's gravel roads should be limited to a maximum of 15 miles per hour as submitted for the 2007 Radar Permit update.

3. Gravel roads in the network should remain unpaved as part of the trail design.

Design principles for trails parallel to Georgia Department of Transportation state routes (Arnold Mill Road (SR140), Crabapple Road (E-W SR372), Birmingham Highway (N-S SR372), and Cumming Highway (SR9):

4. The Georgia Department of Transportation should be encouraged to adopt a new policy that would mandate state-funded construction of shared use trails when a major transportation project takes place along a state route where a trail has been designated by the local government's officially adopted transportation plan, comprehensive plan, bicycle plan, pedestrian plan, or bicycle and pedestrian plan.
5. Shared use trails parallel to state routes should be designed in accordance with the Right-of-Way Ordinance definitions and following design guidelines:
    a. In rural areas the trails should be 12 feet wide, have an asphalt surface, and be separated from the edge of pavement by designs in accordance with the AASHTO Roadside Design Guide, latest edition. This recommended policy is applicable to Birmingham Highway outside of the Crabapple Overlay District and Arnold Mill Road.
    b. In urban areas the trails should be 12 feet wide, have an asphalt surface and be separated from the back of curb by a grass strip minimum of 4 feet, except where utilities conflict and the strip may be reduced to an absolute minimum of 2 feet. It is applicable to Cumming Highway (SR9) and Arnold Mill Road SR140. This policy is intended to supersede the SR9 Overlay Standard.
    c. Due to the Atlanta Regional Commission designation of Cumming Highway (SR9) as a regional strategic bicycle corridor, for SR9 only an acceptable alternative to a shared use trail is a combination of standard on-road-system bicycle lane with a 6 foot wide asphalt path behind the ditch section in accordance with the AASHTO Roadside Design Guide.
    d. For urban areas in the Crabapple Overlay District, the Overlay District Standards will be maintained, including 7 feet grass strip with 6 feet of concrete sidewalk. This policy applies to Crabapple Rd (SR372).
6. In other urban areas with curbs, the grass strip width between the curb and the trail should be a minimum of four feet, excepting locations were the location of utilities may require a narrower strip that can be reduced to an absolute minimum of two feet.

Design principles for trails parallel to City of Milton roads designated for shared use trails:

7. Shared use trails parallel to City roads should be located beside roads with low and moderate levels of traffic.
8. As shared use trails are constructed, speed limits on the parallel roads should be limited to 35 miles per hour as submitted for the 2007 Radar Permit update.
9. Trails should be 8-12 feet in width and separated from the edge of pavement by design in accordance with the AASHTO Roadside Design Guide.
10. In urban areas with curbs, the grass strip width between the curb and the trail should be a minimum of four feet excepting locations were the location of utilities may require a narrower strip that can be reduced to an absolute minimum of 2 feet.
11. Areas of the Milton roadway network shall always meet or exceed the related Overlay Districts. However; it is recommended that the following changes be made:
    a. Crabapple Crossroads area: Paths that are not parallel to rights-of-way may be either gravel or asphalt.
    b. Birmingham Crossroads area: increase minimum grass strip width to 4 feet with a utilize exception to 2 foot absolute minimum. Concrete shall be used within the limits of the overlay district.
    c. NW Fulton Overlay District: increase minimum grass strip width to 4 feet with a utilize exception to 2 foot absolute minimum.
12. The surface of these trails should, where possible, be gravel, but constructed with a base so that asphalt can later be overlaid as necessary. Gravel sections are encouraged to have special underlayment to prevent erosion, horse rutting, and to better allow for drainage and ADA accommodations.

13. The trail surface may be asphalt where expedient due to drainage, topography, or other engineering considerations. The trail surface may be asphalt or concrete if necessary for compatibility with existing trails or sidewalks.
14. Trailheads should be located near parking facilities at the City's parks, schools, and retail centers.

Recommended City policies related to trails:

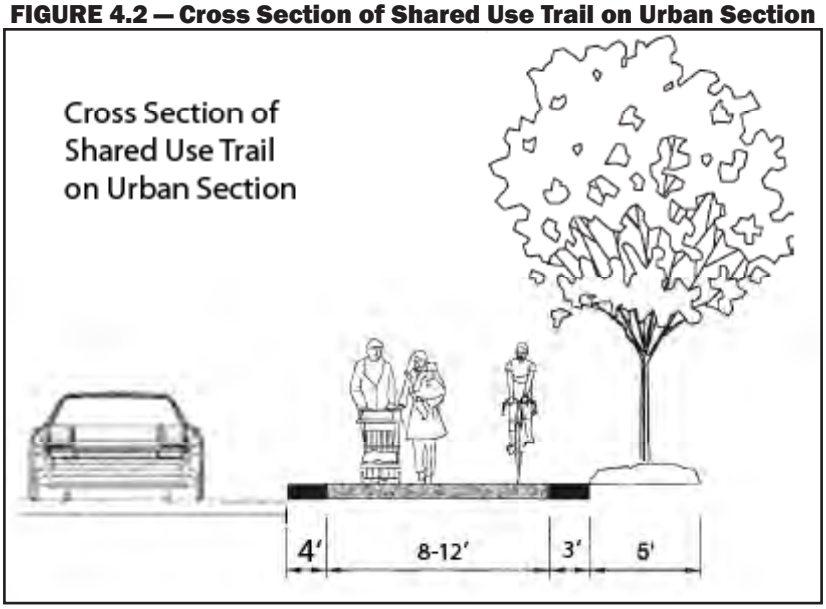
15. Milton trails should maintain the existing trees and tree canopy where feasible to produce shade for the trail. The trail may divide at times into two 4 foot wide sections to save a tree without passing directly beside the tree trunk. The City arborist should be involved in tree-related design considerations.
16. The City should review all development proposals in the context of the Milton trails plan.
17. When development takes place along a City road that has been designated as part of the Milton trails network, the developer should be required to construct a shared use path to the same design specifications that are used by the City.
18. Developers should be required to provide inter-parcel non-motorized connectivity when adjacent to the Milton trail and as required by the Transportation Engineer.
19. Pedestrians and bicyclists should be given routine accommodation in all types of development and redevelopment.
20. Developers should receive incentives when they integrate showers and lockers into their shared facilities.
21. To facilitate future bike, pedestrian, and passenger car mobility, developments with large numbers of cul-de-sacs should be discouraged and developments with greater internal and external connectivity should be encouraged.
22. To maintain the rural character of the City, the lighting of trails is discouraged.
23. The committee encourages accommodation of persons with disabilities where reasonable.
24. Individual sections of the trail system will be designated by separate colors.
25. At each trailhead and major road/trail intersection, trail signs will be posted that are constructed of wood or a close facsimile; are designed to reinforce the rustic nature of the trail; and include the City's horse logo, a map of the entire trail system with a table of trail mileages, and hitching posts beside the sign.
26. Trail directional signs will be posted at major trail branch points. These will ideally utilize existing signposts in the locale.
27. Where a safety barrier is required, two-board or four-board fences will separate the trail from the road. This idea is intended for use in areas to aid children crossing side streets. Where a heavier barrier is required guardrails in the style of National Park Service timber guardrails will be used. This idea is intended to be utilized by the Community Services Department using standard engineering guidelines for safety installations.
28. Funding should be included in the CIP plan for minor bridges where needed for stream crossings. These will include a 1 horse design weight limit.

Recommended rules for trail use:

29. Motorized vehicles are prohibited from the trails.
30. Horses are permitted on gravel and asphalt sections of the trails.
31. Trail users are required to remove all animal waste from the trail surface.
32. Trail users with pets must keep their pets on leashes.

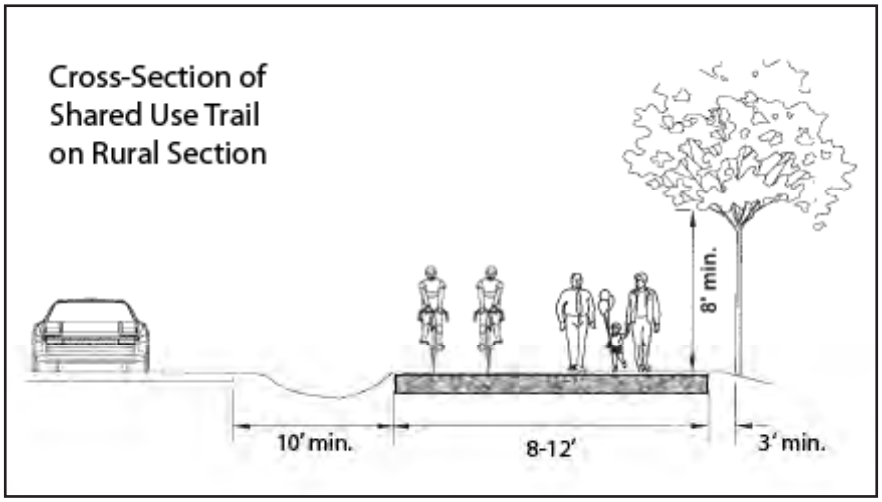
Figures 4.2 and 4.3 show typical urban and rural cross-sections based upon these policies.

FIGURE 4.2 — Cross Section of Shared Use Trail on Urban Section



Source: Figures modified from the *Georgia Department of Transportation Pedestrian and Streetscape Guide*, pg. 78 and 80.

FIGURE 4.3 — Cross Section of Shared Use Trail on Rural Section



Source: Figures modified from the *Georgia Department of Transportation Pedestrian and Streetscape Guide*, pg. 78 and 80.


Milton
Trail

Section V:
Cost, Funding, and Implementation

This section of the report provides general cost estimates and sources of trail funding.

A. Cost for the Core Network

Construction costs for shared use trails vary greatly and are subject to a large number of variables including topography, soils, right-of-way costs, material costs, labor costs, and design costs. These costs can not be calculated to a high degree of certainty without a detailed engineering study that reviews the trail route and determines the exact placement and specifications of the trail, then requests proposals for the actual construction. Once the City has gained one or more years of experience in constructing the core network it should be possible to generate projected future costs more accurately.

Despite these difficulties, it is still possible to calculate overall cost estimates by calculating the miles (or feet) of trail to be constructed then multiplying that distance by an overall cost per mile (or foot) and adding exceptional expenses such as bridges or tunnels. This approach, though, relies upon a number of assumptions.

First, the length of the network segments was calculated by digitizing the proposed network into a geographic information system (GIS) and calculating the length of each section. In general, the length of a section will be equal to the road it parallels, but in some cases the trail may need to curve or wind to miss obstacles. The more difficult task is estimating overall cost per mile of trail. Recent cost estimates for asphalt trails in the City of Roswell and Gwinnett County have been about $500,000 per mile. Estimates for Johns Creek have been much lower at $200,000 per mile and ones for Forsyth County much higher at $1,000,000 per mile. This report will adopt the Roswell and Gwinnett figure of $500,000 as reasonable. The cost of gravel trails is substantially lower than asphalt ones, ranging from 33% to 50% of the cost of asphalt according to state departments of transportation in several eastern states. If we adopt a figure near the midpoint of this range (40%) the cost of gravel trails can be estimated at $200,000 per mile.

The committee has recommended that gravel trails are more in keeping with the traditional rural character of the city. It also acknowledges, however, than in many areas a hard asphalt surface may be necessary due to slope, drainage, or other engineering constraints. The project team and City staff believe that it is reasonable to assume that 60% of the core network will be gravel and 40% asphalt, so the cost estimates assume a 60/40 split between the two surfaces.

There are three places where the core network must cross a significant stream: Freemanville Road over Cooper Sandy Creek (south of Providence Road), Cogburn Road over Cooper Sandy Creek (south of Alpharetta's North Park), and Thompson Road over Chicken Creek. Pedestrian/bicycle bridge costs are difficult to estimate without site studies. However, given the length of the existing roadway bridges and the Federal Emergency Management Agency maps of the 100-year flood zones for the area, the approximate distances to be spanned are 110, 70, and 95 feet (for Freemanville Road, Cogburn Road, and Thompson Road respectively).

The National Trails Training Partnership has estimated the cost of cast-on-site concrete pedestrian bridges as $65 to $80 per square foot. Applying the $80 per square foot cost to the Freemanville bridge (100' long and 10' wide) would yield a cost of $88,000. For the Cogburn bridge (70' long and 10' wide) the cost will be about $56,000, and for the Thompson bridge (95 feet long and 10' wide) about $76,000.

The final cost estimate is for gravel road marker signs. For the core network there are about 20 road endpoints. Assuming a professional design cost of about $10,000 and manufacturing cost of $500 per sign

produces a gravel road cost of $20,000.

The following table (Table 5.1) shows the calculated length of each section of the core network and the total estimated cost for that section. Assuming that most of the network can be funded through transportation enhancement funds, the City's 20% share of total costs will be about $200,000 per year for four years, and about $90,000 in the final year.

TABLE 5.1 — Milton Trail Core Network Cost Estimation

Trail Section	Length (in miles)	Trail Cost	Bridge Cost	Total Cost	City Cost
Gravel roads with markers; Year 1	9.53	$20,000	-	$20,000	$20,000
Freemanville south section: Year 1	2.77	$885,000	$88,000	$973,000	$195,000
Bethany/Cogburn section: Year 2	2.85	$912,000	$56,000	$968,000	$194,000
Freemanville north section: Year 3	3.17	$1,015,000	-	$1,015,000	$203,000
Thompson section: Year 4	2.72	$870,000	$76,000	$946,000	$189,000
Birmingham section: Year 5	1.39	$444,000	-	$444,000	$89,000
Total	22.43	$4,126,000	$220,000	$4,346,000	$870,000

Assumed asphalt trail cost of approximately $500,000 per mile is based upon recent construction and estimates in Gwinnett County and Roswell.
Assumed gravel trail cost of approximately $200,000 per mile is based upon data from several eastern states that estimates gravel trail construction costs are from 33% to 50% of asphalt trail costs.
Estimates assume that 60% of the trail mileage will be gravel and that 40% will be asphalt.
Local cost assumes a 20% local contribution to federal/state transportation enhancement funding.

B. Funding of The Milton Trail Network

The topic of funding plays a vital role in the long term effectiveness of a plan. The challenge of funding planned programs and projects remains long after the plan has been finalized and approved. Obtaining funds for projects requires knowing what funding resources are available and what projects are well-matched to their criteria. The ability to access these funds is determined by effective participation in the transportation planning processes of the Atlanta Region. In most instances, the process attempts to balance regional need with available funds, which is does by evaluating potential projects for funding. Criteria for accessing these funds are related to eligibility, need (both local and regional) and ability to achieve the goals of the funding category. There is a clear advantage for communities that have their projects ready prior to requesting funds. Readiness is achieved by local governments taking a proactive stance toward designing their projects with local funds and then requesting federal/state assistance with construction only.

Another way to approach the issue of accessing federal and state funds is to fully understand the bigger picture needs and desires of the funding agencies. There is tremendous market demand for innovative answers to the region's pressing issues, including congestion and continued growth in vehicle miles traveled (VMT). If a local government approaches these issues with a fresh perspective, political will, and some local money to begin the process, and then follows up with strategic dialogue with the funding agencies, there is potentially an opportunity to become an example for effective transportation planning.

In 2006, The Georgia Department of Transportation (GDOT) developed the *Guidebook for Pedestrian Planning* to assist communities with prioritizing and funding pedestrian planning projects. This *Guide* contains a chapter specifying mechanisms for the funding of both bicycle and pedestrian facilities in Georgia communities. The entire report is available at http://www.dot.state.ga.us/bikeped/pedestrian_plan/.

The following section provides a summary of the funding resources found in the GDOT report that will be potentially applicable for the provision of bicycle and pedestrian facilities in the City of Milton.

FEDERAL & STATE FINANCING SOURCES

Much of the funding for the construction, improvement, operation and maintenance of infrastructure comes from monies distributed by the Federal Government through transportation legislation like the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This legislation provides revenue sources for bicycle and pedestrian plan and facility funding through such programs as the Surface Transportation Program (STP), Congestion Mitigation and Air Quality Improvement Program (CMAQ), Safe Routes to School, and Recreational Trails, all of which are disseminated through the transportation planning processes administered by Georgia DOT and Atlanta Regional Commission (ARC). There are also some funding mechanisms provided through the State of Georgia that are disseminated by other entities including, Highway Safety Funds (administered by GDOT District 7) and Local Development Funds (administered by the Georgia Department of Community Affairs (DCA).

STP SET-ASIDE FOR TRANSPORTATION ENHANCEMENTS (TE)

Georgia's Transportation Enhancement Program (TE) is one of the most successful TE programs in the nation. Funds provided through the TE program are eligible for use in the provision of facilities for pedestrians and/or bicycles and for the provision of safety and educational activities for pedestrians and bicyclists. To be eligible for funding, projects must be sponsored by a governmental body and upon selection the project must be included in the TIP. Under this program, the sponsoring body is required to fund 20% of the cost and the remaining 80% will be covered by designated federal funds administered through the state. There is a $1 million per project maximum, per State Transportation Board policy.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM (CMAQ)

Money for this program comes from the Federal Government and is allocated to states based on the population living within ozone and carbon monoxide non-attainment areas and the relative severity of region's air quality problems. Under this program, the sponsoring body is required to fund 20% of the cost and the remaining 80% will be covered by designated federal funds administered through the state. Bicycle and pedestrian facility programs are eligible for CMAQ funding. The Federal Highway Administration (FHWA) requires an emissions analysis to show actual emissions benefits that will come about from implementation of the project.

For the metro Atlanta area, the air quality monitoring for such a project is performed by the Atlanta Regional Commission (ARC). Projects are selected by the ARC along with GDOT, the Environmental Protection Agency, and the Georgia Regional Transportation Authority (GRTA). Typically, bicycle and pedestrian projects have a lower chance of being selected because of their relatively low potential effect on emission levels. However, pedestrian and bicycle projects have been funded when they were heavily transportation-focused, such as providing access to transit or to schools.

The *Georgia Guidebook for Pedestrian Planning* provides some suggestions for requesting CMAQ funding:

- Complete emissions analysis prior to funding request.
- Clearly link the proposed project to a reduction in emissions.
- Identify distance of project from key facilities (e.g. school, neighborhood, other destination) to assess potential for the reduction of auto trips when the project is implemented.
- When possible, quantify potential vehicle miles traveled (VMT) reductions from the new project.

SAFE ROUTES TO SCHOOL

The purpose of the Safe Routes to School program is to enable children, including those with disabilities, to walk and bike to school. The intent of the Safe Routes to School program is to make bicycling and walking to school safe and attractive for school children. This program is designed to support projects (design, development, and implementation) that improve bicycle and pedestrian safety while reducing air pollution and traffic in the vicinity of elementary and middle schools.

Funds from the Safe Routes to School program can be used for projects including sidewalk improvements, pedestrian crossing improvements, off-street facilities and traffic diversion within approximately 2 miles of elementary and middle schools. This program is 100% federally funded (no match required) and funds are administered through GDOT.

RECREATIONAL TRAILS PROGRAM (RTP)

The Recreational Trails Program (RTP) is a grant program that provides funding for the creation and/or maintenance of recreational pathways and trails that have been identified in, or that further a specific goal of, the Statewide Comprehensive Outdoor Recreation Plan (SCORP). The RTP is administered through the Georgia Department of Natural Resources and requires a 20% local match. The funds can be combined with other Federal program funds provided they are for a project that would be eligible for the RTP.

The current SCORP for the State of Georgia will expire in September 2007 and the process is underway to set the SCORP for 2008 –2013. Information on the process can be found on the Georgia State Parks website: http://gastateparks.org/net/content/go.aspx?s=132975.0.1.5.

HIGHWAY SAFETY FUNDS

The Governor's Office of Highway Safety provides funding for safety-related programs, including pedestrian and bicycle projects that improve safety along or across roadways. State grants are available for up to three years, with the first year being 100% funded, the second year requiring a 20% match, and the final year requiring a 40% match. Funding is generally prioritized by crash frequency.

LOCAL DEVELOPMENT FUND (LDF)

The Local Development Fund (LDF) program is administered by the Georgia Department of Community Affairs (DCA). Pedestrian improvements such as recreational pathways, sidewalk improvements in historical districts, or ADA-related improvements may be eligible for funding. The city is required to commit local funds or in-kind contributions to match the state funding.

Table 5.2 provides a summary of these programs and contact information.

TABLE 5.2 — Federal and State Funding Sources

Funding Program	Required Matching Funds	Deadlines	Available Annual Funding	Contact/Information
Transportation Enhancement (TE)	20%	Biennial	$80 million over the 8-year legislative period	http://www.dot.state.ga.us/DOT/plan-prog/planning/projects/te/index.shtml
Congestion Mitigation/Air Quality Program (CMAQ)	20%	Variable	$43 Million	http://www.dot.state.ga.us/DOT/plan-prog/planning/AQ/CMAQ/index.shtml
Safe Routes to School	None	None	Minimum of $1 million annually	http://www.dot.state.ga.us/DOT/plan-prog/planning/projects/bicycle/SRTS/index.shtml
National Recreational Trails Fund	20%	Fall	Approximately $1.3 million statewide, maximum $100,000 per project	Contact: RTP Coordinator, Georgia State Parks Phone: 404.656.6536 http://www.gastateparks.org/grants
Highway Safety Program	Year 1- 0% Year 2- 20% Year 3- 40%	On-going	$15 million annually	http://www.gohs.state.ga.us/main.html
Local Development Fund	Equivalent local match—dollars or in-kind	Semi-annual competition in Spring and Fall	Each project not to exceed $10,000	Contact: Program Manager Phone: 404.879.4789 http://www.dca.state.ga.us/economic/financing/programs/ldf.asp

Source: Table is summarized from the *Georgia Guidebook for Pedestrian Planning, Chapter 3*.
Available online: http://www.dot.state.ga.us/bikeped/pedestrian_plan/

LOCAL SOURCES AND OTHER SOURCES OF FUNDING

Funding for bicycle and pedestrian facilities can be acquired through local means and also through private funding entities. In addition to the use of local general funds, funding instruments such as community improvement districts (CIDs), revenue and general obligation bonds, parks and recreation funds, development agreements, and grant funding through private foundations can be used to finance bicycle and pedestrian projects.

COMMUNITY IMPROVEMENT DISTRICTS (CIDS)

Community improvement districts are areas in which commercial property owners within the area vote to impose additional ad valorem taxes. The funds from this additional tax are used explicitly in the designated improvement district. CID funds can be used for infrastructure provision and improvement as well as enhancing services provided by local governments. CIDs allow commercial property owners to focus on projects that are specific to their area's needs. Funding from CIDs has been used to fund bicycle and pedestrian facilities as well as other infrastructure improvements such as streetscaping and intersection improvements. For a CID to proceed, a law must be passed by the Georgia Assembly. GDOT's *Georgia Guidebook for Pedestrian Planning* lists nine improvement districts in the metro Atlanta area. These districts are shown in Table 5.3.

TABLE 5.3 — Metro Atlanta Improvement Districts

Improvement District Name	Information
Atlanta Downtown Improvement District	http://www.atlantadowntown.com
Buckhead CID	http://www.buckhead.net/cid
Cumberland CID	http://www.commuterclub.com
Gwinnett Place CID	http://www.gwinnettplacecid.com/
Highway 78 CID	http://www.78cid.org/
Midtown Improvement District	http://www.midtownalliance.org
Perimeter CID	http://www.perimetercid.org
South Fulton CID	http://www.come.to/southfultoncidwebsite/projects.lhtml
Town Center CID	http://www.cobbrides.com/cidpg.html

Source: Table is summarized from the *Georgia Guidebook for Pedestrian Planning, Chapter 3.*
Available online: http://www.dot.state.ga.us/bikeped/pedestrian_plan/

REVENUE AND GENERAL OBLIGATION BONDS

Although bonds are technically a financing mechanism, revenue and general obligation bonds are often tied to specific facility and infrastructure provision and improvement. As such, they can be thought of as a potential funding source for bicycle and pedestrian improvements. Revenue and General Obligation Bonds must be approved by voters and once approved, the funds must be used for the designated purpose.

PARKS AND RECREATION FUNDS

Park and Recreation funds can be used for the construction and maintenance of pathways and related facilities such as lighting, parking, pocket parks, and landscaping.

DEVELOPMENT AGREEMENTS

The City of Milton can require developers to provide of bicycle and pedestrian facilities at the time of development or to enter into an agreement to make future contributions towards the provision of bicycle and pedestrian infrastructure. When using development agreements, it is important that they be specific and that they be consistently monitored to ensure consistency and compliance.

PRIVATE FUNDING SOURCES

Natural and local philanthropic efforts can help fund trail construction. For example, the Robert Wood Johnson Foundation is a nationwide philanthropy devoted to improving the health of all Americans. They regularly provide grants for projects, programs and research that help improve public health and quality of life. One of their priority funding areas is the promotion of healthy lifestyles and communities. To receive funding, a project must demonstrate a broader scope than just capital improvement. More information about the Robert Wood Johnson Foundation can be found at http://www.rwjf.org/.

The PATH foundation is a non-profit organization that aims to establish a system of linked greenway trails through metro Atlanta. PATH works in partnership with local governments to build multi-use trails for bicycle and pedestrian use. In some cases, PATH will match funds for the financing of these projects. More information on PATH can be found at http://www.pathfoundation.org.

C. Implementation of The Milton Trail Network

There are multiple steps necessary for the successful implementation of this plan. First, the City must incorporate an annual expenditure of approximately $200,000 into the City's capital improvements program. This expenditure will allow the City to apply for transportation enhancement funding from the Georgia Department of Transportation. Table 5.1 lists the necessary annual City expenditures for a 20% share over the five years of the capital improvements program. Second, the City should begin development of a Safe

Routes to School plan. This plan is a pre-requisite for applying for Safe Routes funding, and the majority of the core network falls within the geographic areas eligible for this funding. Although these two of the most promising external funding sources, the City will also want to pursue funding from the other state and federal program listed above.

Third, the City should incorporate the recommendations of the Milton Trail Plan into its comprehensive plan and transportation plan. As these plans are developed it is possible that some features of the Milton Trail Plan will need to be modified, but it is also essential that the City's transportation and comprehensive plans take into account the Trail Plan. Over the shorter term, the City's Right-of-Way ordinance and development ordinances should be modified to take into account the policy and design recommendations listed in section IV, part C.

Last, it would make good sense to revisit the plan by re-convening, at least once a year, the Citizens Advisory Committee. The Committee could evaluate the success of the plan's implementation, compare actual costs of construction to projected costs, and re-establish priorities as necessary. The Committee did excellent work, and its on-going input would help ensure the successful implementation of the plan.


Milton
Trail